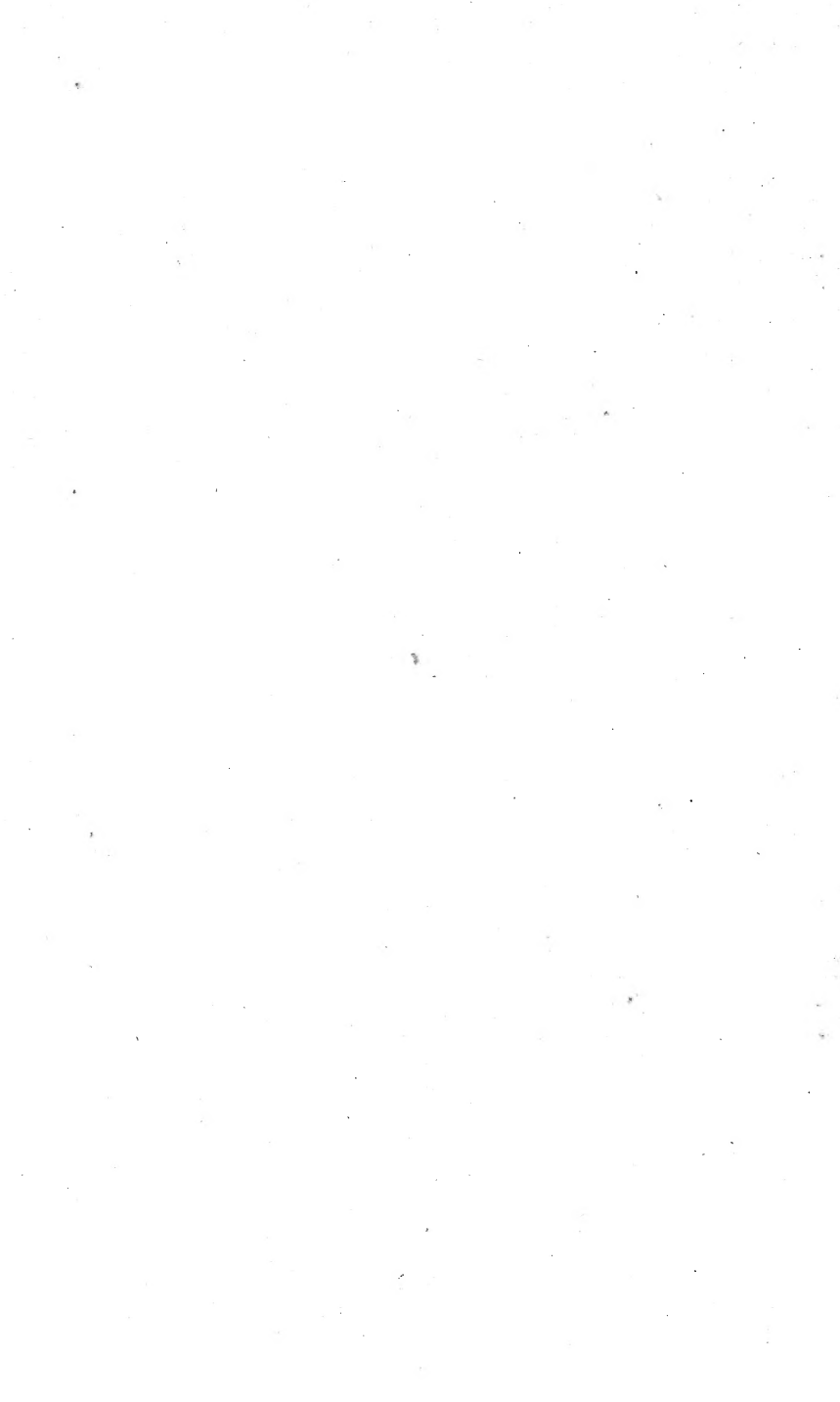


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NOTE.—The plate of *Mantellia nidiformis* will be forwarded by
the Secretary, as it has not yet been finished.

EDITOR.







PROCEEDINGS
OF THE
DORSET NATURAL HISTORY &
ANTIQUARIAN FIELD CLUB,

EDITED BY

Professor BUCKMAN, F.G.S., F.L.S., &c.

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THE DORSET NATURAL HISTORY AND ANTIQUARIAN FIELD CLUB.

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Fossil Cycads.

By J. C. MANSEL-PLYDELL, F.G.S., F.L.S.,

&c., &c., President.

THE Geologist has but few opportunities of acquainting himself with the Flora of any past period, because the perishable parts of their structures, unless rapidly covered over, leave scarcely any traces. The actual vegetation therefore of a formation is rarely met with, and still more so the old land-surface on which it grew. Exceptions are the coal-fields of the Carboniferous age, and the Dirt-Beds of the lower Purbecks, from which the fossil I now propose to bring under your notice was exhumed. It belongs to an order of plants which, although exogenous has some links of affinity with Cryptogams. This Gymnospermous order includes Coniferæ, Cycadeæ, and Gnetaceæ, the earliest flowering plants known; of these three, the Coniferæ only now grow in Europe. They are distinguished from the higher forms of Cryptogams, mosses, equisetæ, and ferns (which also have leaf-appendages and vascular tissue), by bearing a distinct flower, a seed which is naked, and the stems having rings of annular growth. In point of time the

conifers preceded the cycads, and as early as the Carboniferous age formed as prominent an object in the landscape as they do now. The late Hugh Miller found one in the lower division of the Old Red Sandstone, near the town of Cromarty. They increased greatly towards the close of the palæozoic age, both in genera and species. The dioecious Taxinian branch of this Order has been met with in the Calciferous Sandstones of Edinburgh—a Lower Carboniferous formation—also the stem and spike of an Aroid. Cryptograms of higher organization than their present congeners clothed the lower levels of the land at this period, while *Stigmaria* and *Sigillaria*, which had hitherto formed so important a feature in the palæozoic vegetation, began to decline, and entirely disappeared before the secondary period was ushered in. At this time of the earth's history the first cycad appeared, accompanied by new forms of conifers *equisetæ* and ferns, which began to cover the heights of the newly emerged land, giving quite a new aspect to the flora. No true grass is known to have lived at this period. New forms of cycads successively appeared, and became more and more numerous during the latter part of the permian age; during the oolitic age they reached their maximum in England, and probably also over the whole globe. After the wealden period they showed symptoms of decline, and from that time, although perhaps slowly, receded step by step, leaving no traces of their existence for long periods. The cretaceous age was properly the closing

period for cycads. Professor Nordenskiöld brought home no less than eight species from the Lower Cretaceous beds of Greenland, lat. 70, N. The monocotyledonous Palm family, which is met with in the carboniferous beds, like the cycads, dwindled down at this time to three species; but afterwards recovered itself so marvellously that the eocenes can claim twenty-nine, and the miocenes thirty-one species, while the cycads disappeared entirely. I say this with some reserve, as Le Comte de Saporta states that Professor Heer has found a cycad in the middle tertiaries of Switzerland; * but on referring to the Professor's valuable work, "*The Primæval World of Switzerland*," the translation of which was published under his direction, last year, I find the following: †—Cycadeæ, formerly so numerous, of the Gymnospermous subclass, are represented only by two species; and of these the fragments of stems and remains of leaves, that have come down to our times are so imperfect that their determination cannot be regarded as certain." Again, a fossil cycad is reported to have been found very recently in a miocene deposit at Koumi, in the Negropont. The specimen consists of a frond, each foliole of which measures about four inches; its characters agree with that of *Encephalartos*, a living African family, which, if so, we are led to the conclusion that while several families of cycads of the secondary age have entirely disappeared in Europe,

* *Paléontologie Française*, 2nd. ser., vol. ii., p. 4.

† Vol. i., p. 323.

others existed, whose generic representatives are now peculiar to Southern Africa. This tendency to extinction cannot be attributable to a decrease of temperature like that of the Palm tribe and other tropical plants, nor to the introduction of more vigorous plants; but to a slow and inevitable decline, due, probably, to their unyielding character, as well to a difficulty of propagation. Their decline, which was accompanied with the appearance of some of the first dicotyledonous angiosperms, was so effectual that for ages more or less remote, they have left no trace in Europe. The living representatives of cycads are dispersed over the globe, but only in small groups, separated by enormous tracts and confined to the tropical and temperate regions of Asia, Southern Africa, America, and Australia. They prefer the slopes of mountains and moist sandy spots sheltered by trees, for the protection and growth of the young plants, whose stages to maturity are slow and lingering. The internal structure of the whole family is similar, consisting of a large pith, the cells of which afford the tree a rich supply of starch. The stem is very slow of growth, and becomes in course of years a stout column, which sometimes attains a height of some feet. The surface of the stem is furnished with leaves, arranged spirally, and a rosette of large foliage leaves is annually or biennially produced, in the centre of which the terminal bud is embosomed, enveloped with scales, under whose protection the new whorl of leaves is slowly formed. An axillary bud is often attached to the exterior of the trunks of fossil cycads,

which are either the rudiments of a branch or of a young plant. The living cycad has occasionally a bud at the base of its stem representing a true bulbil, which remains a considerable time in a state of inactivity, and after sending out rootlets produces a leaf which is at first simple, but afterwards becomes divided into a few pinnules; the young plant then assumes the character of the parent. The leaves of cycads, with one exception, are pinnate, adhering laterally, or on the upper surface of the furrowed rachis. The leaflets have simple parallel veins, and, like ferns and grasses, decay on the stem; but, owing to the petiole being disarticulated, the portion nearest its junction with the trunk remains attached, and thus adds to its bulk. The flowers of this family are all diœcious; the male and female flowers of its living members, with the exception of *Cycas*, resemble fir cones externally, the carpel bearing only two ovules, attached right and left to a peltate expansion on a slender pedicel.

The Purbecks already alluded to are the uppermost beds of the oolitic series. This fluvio-lacustrine formation forms the limits of the great oolitic gulf of which it forms its western boundary. The presence of all kinds of aquatic, amphibious, and land-remains leads to the inference that this great estuary, or lake, was in contiguity with a continent, drained by a large river, which supplied it with its varied land-spoils.

The Dirt-Beds, in which so many vegetable remains are found, are the first sediments that were deposited by

the fresh-water which covered the Upper Portland beds. They indicate the commencement of the delta which extended over a great part of southern England, and extended to Germany. The Skull-cap, a bed from 1ft. to 3ft. in thickness, lying upon the topmost bed of the Portland, beds is succeeded by a thin seam of black earth, which is barren of vegetable remains in Portland, but at Ridgway, where it is only a few inches thick, it contains the trunks of large trees having the appearance of being much decayed externally, with none of the bark preserved. A laminated fresh-water limestone, about eight feet in thickness, divides it from the famous Black Dirt, or Dirt Bed, which is about a foot thick, consisting of a dark loam, containing a large proportion of earth, lignite, and water-worn stones. It must have supported a luxuriant vegetation, for in and upon it are numerous remains of coniferous and cycadeous trees, lying partly in the black earth and partly covered by the superjacent calcareous bed, having the appearance of dome-like concretions which surround the stumps. Of these there are good examples about a quarter-of-a-mile East of Lulworth Cove. The trees are still erect with their roots in the vegetable soil, and broken off a short distance from the ground. A submergence, or change of level, converting the high lands, on which the trees grew into a morass, would inevitably cause the destruction of the forest, and occasion a rapid decay, especially at the bases of the trees, and, thus weakened, they would yield to the force of wind or flood, and break off a few inches from the root. The Dirt Bed is

well exposed at the Ridgway railway cutting. The most eastern evidence of the Purbeckian forest in Dorsetshire is at Gad Cliff, on the western side of Kimmeridge Bay, where a magnificent trunk lies among the *debris* of rocks, at its foot, encased in a limestone shroud ; these base-beds of the series occur again at Tisbury ; Doctor Buckland records them at Thame, in Oxfordshire, and Doctor Fitton in the Vale of Wardour ; they appear at Swindon, on the top of the Portland beds, containing conifers and a few examples of *Mantellia*.

In 1854 there were only seven genera of cycads known, in connection with the secondary rocks of Great Britain. Mr. Carruthers, in his important and exhaustive memoir* on fossil cycadean stems of that period, read before the Linnean Society in 1868, retains the nomenclature of two genera only—*Mantellia* and *Bucklandia*—and establishes four new genera—*Yatesia*, *Williams-onia*, *Bennettites*, and *Fittonia*, including eight new species ; two new species are added to *Bucklandia* and two to *Mantellia*. Six of the twenty-two species enumerated by the author of the memoir have been found in Dorsetshire,

Yatesia gracilis, Carr,
Bennettites Portlandicus, Carr,
Mantellia nidiformis, Brongn,
M. intermedia, Carr,
M. Microphylla, Miq,
M. pygmæa, Carr.

* Transactions of the Linnean Society, Vol. xxvi., pp. 675-708.

Having brought our investigations of the cycadean family to this point, I now beg to direct your attention to the examination of two fossils, which I am enabled to bring to your notice through the courteous kindness of Mr. Clifton, Governor of Her Majesty's Convict Prison at Portland.

MANTELLIA. Brongniart.

Cycadeoidea, Buckland, Proc. Geol. Soc. Vol. i., p. 80.

Cycadites, Buckl., Geol. and Min., p. 496.

Echinostipes Porrie.

Trunk cylindrical, covered with the long permanent bases of the petioles, medulla entirely cellular, with numerous gum canals. Wood consisting of a cylinder of striated tissue every where penetrated with medullary rays. Fruit borne on secondary axes generally protruding beyond the bases of the petioles.

Mr. Carruthers retains Brongniart's name in preference to that of *Cycadeoidea* given provisionally by Buckland, but afterwards withdrawn by him in favour of *Cycadites* under the erroneous idea that *Mantellia* was doing service for a genus of sponges. Mr. Carruthers says on this subject :—"Were Buckland's name unobjectionable it ought to be retained because of its priority by a month or two, but as it originated in an error, was withdrawn by its author, and is in itself, as Brongniart and others have said, objectionable, it seems necessary to reject it in favour of *Mantellia*."

The trunks of this genus are usually silicious, the beds surrounding them being much impregnated with silex ; their growth must have been very slow, as may

be inferred from the numerous closely-packed layers of the petioles, each layer representing the successive growths of the crowns of leaves, which adorned the summit of the tree. The petioles are separated by a thick ramentum, which forms the elevated margins, circumscribing the lozenge-shaped depressed areas which were occupied by the petioles during the plant's lifetime.

MANTELLIA NIDIFORMIS. Brongn.

Cycadeoidea megalophylla. Buckl.

Mantellia megalophylla. Bronn.

Cycadites megalophyllus. Buckl.

Zamites megalophyllus. Presl.

Encephalartos Bucklandii. Miq.

Echinostipes nidiformis. Pomel.

Trunk cylindrical, permanent bases of the petioles large, lozenge-shaped, two or three inches broad, by one and a half deep, meshes in the woody cylinder small and scattered.

The height of our Portland fossil is five inches, its breadth, including the cortical appendages, ten inches ; a transverse fracture has removed a portion of the stem below the summit, and exposes to view the internal structure of the trunk. Through pressure its natural cylindrical shape has become slightly elliptical, the centre, which is composed of true cellular tissue, free from separate woody bundles, and penetrated throughout by gum canals, is an inch and three-quarters in diameter, and circumscribed by a vascular band traversed by medullary rays, an inch and a half across ;

this band is much broader than that of a living *Zamia*, and placed nearer the circumference of the stem. A cortical zone, similar in structure to the centre medulla, surrounds the woody cylinder, and from it spring the leaves, which are supplied with vascular tissue, passing through the cortical cells into the petioles of each leaf in small distinct bundles.

The petioles encircle the trunk, and are slightly keeled below, the edges are curved upwards, giving the upper surface a somewhat concave appearance. The depth of the zone of petioles exceeds the diameter of the tree, giving it the character of being much larger than it is, its exterior ornamentation looks like trellis-work, the compartments are disposed spirally, and are seldom filled, the decayed leaves having left a cavity surrounded by the mesh-shaped ridges of the ramentum, which, during the life of the tree, clothed the under surface of the leaves, and distinctly separate each from its neighbours. Some of the most durable may be observed filling up the depressed areas.

The exterior of the fossil bears three axillary branches, which are associated with the bases of the petioles, and probably supported the organs of reproduction. Some trunks bear no branch nor bud, which may have been male plants, their staminal flowers would in that case be produced at the termination of the main axis.

Mantellia nidiformis usually exhibits a deep cavity at its summit; the apex of the stem being more perishable and longer under the influence of the

changes which occurred during fossilization, would leave a hollow, giving the fossil the appearance of a bird's nest. The fruit is borne at the end of a short and slender branch, having a number of simple acuminate leaves, which are the only foliar organs hitherto found with this species.





Remarks on the Occurrence of certain Plants

IN CONSIDERABLE QUANTITY IN THE VICINITY OF WEYMOUTH.

By EDWIN LEES, F.L.S., F.G.S., Vice-President of
the Malvern & Worcestershire Naturalists' Clubs

BOTANICAL writers of local Floras have not in general sufficiently attended to what Baron Humboldt has called the “Physiognomy of Vegetation,” or what constitutes the apparent vegetation of a district by the aggregation of a number of plants all of one species. This gives a feature to the country, which taken in by the eye can be well understood; but the mere “occurrence” of a plant, though a rare one, however interesting to a botanist, may not make it belong to the endemic Flora of the place where it appears, perhaps, only as a vagrant. Every country has its peculiar or indigenous plants that when gregarious give a feature to the landscape, or to portions of the scenery, and the Palms of the tropics, the Cacti of Mexico, the Sage-plants of the deserts of North America, the Heaths of the Cape of Good Hope, the Banyans of Hindostan, the Laurels and Myrtles of

Greece, the Rhododendrons, or "Rock-roses," of the Alps, and many other instances may be mentioned.

In our own island the astonishing profusion of the Cuckoo-flower (*Cardamine pratensis*) gives a silvery aspect to the moist meadows where it grows, while in succession Daises, Dandelions, and Buttercups dazzle the eye in extensive pastures, and the latter plants especially give a golden week to the summer ere hay-making commences. But besides the general physiognomy given to the landscape where plants of a particular species crowd together, there are numerous spots of mountain, valley, and coast, where plants are localised, and a peculiar feature is given to such spots, which is most interesting to contemplate, and tempts the exploring botanist to many an expedition.

Thus the Cornish Heath (*Erica vagans*) adorns the heathy wastes of the Lizard district, the Cheddar Pink (*Dianthus cæsius*) can only be found in England on the Cheddar Cliffs, the *Veronica hybrida* is especially plentiful and beautiful on Craig Breidden, Montgomeryshire, the *Box* on Box-hill, Surrey, the *Thlaspi perfoliatum* on the oölitic quarries among the Cotteswold Hills, the white-flowered Cistus (*Helianthemum polifolium*) on the rocks of Brean Down, and near Torquay, and many other favoured localities might be mentioned.

Having been recently roaming about Dorsetshire, in taking advantage of a visit to my esteemed friend, Professor Buckman, I have paid some attention to its local plants, especially those in the vicinity of Bradford

Abbas and Weymouth, and marked the feature given to a locality by the abundance of particular plants not generally of common occurrence. This I think worthy of remark to a Dorsetshire Naturalists' Club, and in doing this I trust the worthy observant President, Mr. Mansel-Pleydell, the author of the Flora of Dorset, will not consider me as a poacher upon his manor.

Among the littoral plants that adorn the stony beach between Weymouth and the coastguard-houses, the Sea Bladder Campion (*Silene maritima*) reigns supreme from its abundance, scarcely allowing space for the Yellow Poppy (*Glaucium luteum*) to put in an appearance, which it does but scantily; while every waste place near the sea, and especially in the island of Portland, is covered with the small-flowered Thistle (*Carduus tenuiflorus*) quite in thickets.

A feature is given to most of the pastures and grassy places around Weymouth by the quantities of the Parsley-leaved Water Dropwort (*Enanthe pimpinelloides*) that present themselves, for their very dense umbels of white flowers are very conspicuous all through June. Even at Preston, some distance from the sea, the meadows are filled with it. This plant is decidedly different from either *Enanthe silaifolia* or *Æ. Lachenalii*, though Mr. Bentham, not perhaps fully acquainted with them, has placed them together as one species. I have never met with *Æ. pimpinelloides* north of Worcester.

The Portland Spurge (*Euphorbia Portlandica*) is conspicuous enough on the Portland Island Rocks with

its bloody-red stem, and I have formerly noticed a good deal of it on the railway embankment between Weymouth and Portland, but from some cause it was not so plentiful there this year ; but the gray foliage of *Obione portulacoides* met the eye abundantly. Both here and on the banks of the Fleet the Sea Beet (*Beta maritima*) grew very tall and in great quantity. It struck me as rather curious that the Samphire (*Crithmum maritimum*), that mostly grows high up on the precipitous rocks of the coast, so that it is difficult to reach it, grows plentifully on the embankment of the Portland Railway, and on some parts of the Chesil Pebble Beach, so that gathering Samphire here would *not* be the "dreadful trade" that Shakspeare describes it, unless that epithet be given to an occupation that would find but few customers in the present day, though I have myself gathered it for pickling, and found it not bad.

The rare local plant for which the Chesil Pebble-beach is celebrated, is the Sea Pea (*Lathyrus maritimus*), and this, where it flourishes, forms a pretty feature among the pebbles, especially when in flower ; but as it is almost confined to one side of the pebbly bank, some distance from the Portland Railway-station, the particular spot is rather difficult for a stranger to find. The plants form several green clusters growing entirely by themselves, on the descent to the Fleet, and these verdant clusters may well in the distance be mistaken for rushes, and such I at first thought them to be ; and close inspection is necessary to be undeceived. I

am glad to report that there are several large clusters of the *Lathyrus* all in beautiful flower this year (1877).

The *Vicia lutea*, or rough-podded yellow-flowered Vetch, which is a local plant, may be found in considerable quantity on the cliff near Sandsfoot Castle, and rather curiously, on a hedge bank on the farm of my sagacious friend Professor Buckman, who pointed it out to me. There is another place on the railway embankment between Weymouth and Radipole, where I found a variety of the plant having the flowers purplish, or veined with purple. This is said to have been the case with *Vicia lævigata*, formerly found at Weymouth, but supposed to be now extinct, and, as except in its smooth pod and purplish flowers it differed very little from *Vicia lutea*, it was very probably only a variety of that Vetch.

Another plant that shows itself plentifully all about the vicinity of Weymouth is the *Iris fœtidissima*. It is always conspicuous with its long, shining, rigid, and leathery leaves ; but its blue flowers make it still more conspicuous in July.

Other commoner plants might be mentioned as from growing in extensive patches, giving a colourable feature to the scene, as the pale yellow Ladies'-finger (*Anthyllis vulneraria*), and the Horse-shoe Vetch (*Hippocrepis comosa*), both abundant on the cliffs about Weymouth, as true endemic plants, while the red-flowered *Onobrychis sativa* colours railway banks in various places as an escape from cultivation, being a determined colonist not to be displaced.

I was pleased to observe on the bank of a meadow which descends towards the River Yeo, in the parish of Bradford Abbas, an enormous quantity of the little white-flowered Trefoil (*Trifolium subterraneum*), which is in such profusion, that when in flower it quite whitens the side of the hill, and it might well furnish specimens to the herbaria of every English botanist, and yet an abundance of the plant would remain.

I also noticed that the Monkshood (*Aconitum Napellus*) had got upon the banks of the river Yeo, near Bradford Abbas, and very probably will increase to the extent it has done on both sides of the stream near Whistle Bridge, where any stranger might report it as "truly wild," and certainly giving a peculiar feature to the banks of the brook.

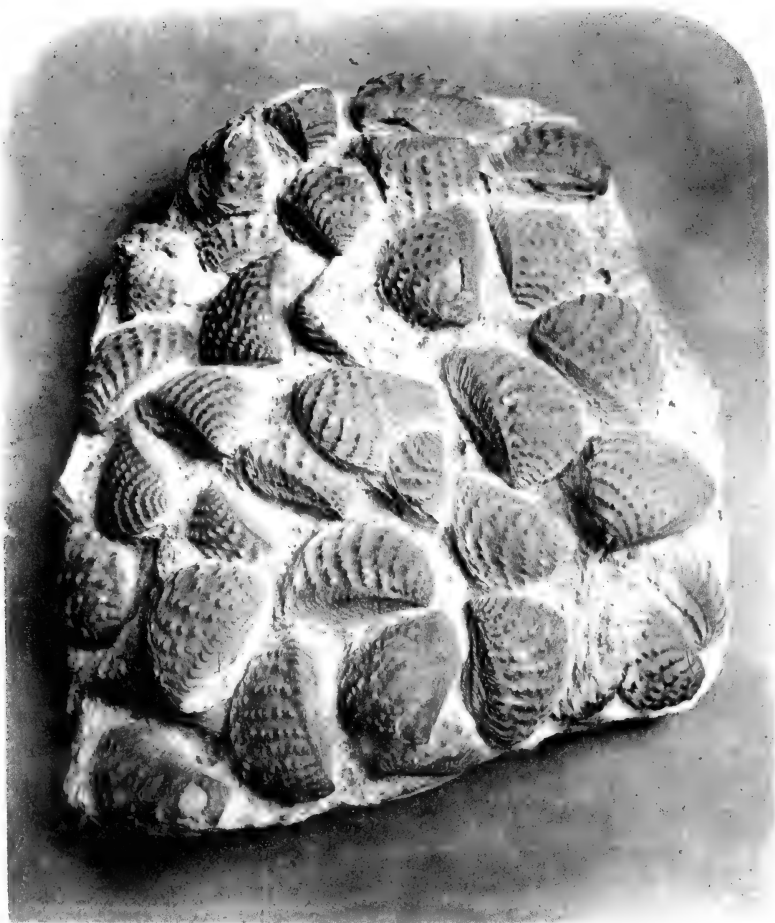
In like manner I observed in Portland, on the rocky ground below Bow-and-Arrow Castle, that the Borage (*Borago officinalis*) had spread in an extraordinary manner by hundreds, giving a wide-spreading azure-blue tint to the ground, and suggesting—not as Darwin has stated, that in the struggle for existence, that "the fittest" maintain their hold upon the soil—but the strongest, and it may be often said the same in the case of the Docks, the Oraches, Goosefoots, and Nettles, the coarsest and the ugliest.

Unfortunately the operations of Man destroy the beauties of Nature, and cultivation introduces useless if not noxious plants, which alter the vegetation of a country, and obstinately flourish as villainous though showy weeds, in spite of every attempt to dislodge

them. It is, however, the duty of a botanist to mark vegetable changes, and notice the spread, continuance, or diminution of plants, whether native or of foreign introduction.







Trigonía clavellata. Sow.



On some Slabs of *Trigonia Clavellata*,

FROM OSMINGTON MILLS, DORSET.

By Professor J. BUCKMAN, F.L.S., F.G.S., &c.

THE genus *Trigonia* of Bruguiere, *Lyriodon*, of Goldfuss, is represented by some three forms of species or varieties, now found on the Australian shores; while over 100 species occur in the fossil state.

Our present remarks apply to a form which, from its being armed with raised tubercles, is placed in the division of the *Clavellata*—and our species is called *Trigonia clavellata*—and is typical of this division. One of the best drawings of this species is by Sowerby, *Min. Conch.*, pl. 87, in reference to which we have the following remark:—"I have figured this from a specimen sent me by the Rev. S. Rackett, from Radipole, near Weymouth, such is also found at Portland. The shell is preserved of much the same texture as a recent oyster shell which has laid in a blackening mud." (*Min. Conch.*, vol i., p. 197). This fixes the locality and geological position, and is interesting as showing that certain clavellated forms from the inferior oolites should not be confounded with the species *clavellata*, though placed in the group of which it is the type.

The formation whence these specimens are derived is that, perhaps, determined by Messrs. Blake Hudleston to be a

member of the *Upper Calcareous Grit*, which is thus described as it occurs at Sturminster Newton Railway section in a valuable paper just brought out by these accomplished geologists:—

“No. 36—*Rough Limestone, shelly, and hardened towards the upper part, and having a thin bed of blue clay below.* This contains a few oolitic grains of all sizes up to that of a pea. *Trigonia Clavellata*, &c. (very many specimens of shells). The authors just quoted say that “*A most fossiliferous quarry may be seen at Glanvilles Wootton, composed of hard blue finely oolitic ragstone, containing shell layers, and gradually into fine shell limestone. The fossils here are Trigonia clavellata (abundant), Astarte polymorpha,*” &c. (*about a dozen specimens, with bivalves*). This we may have the pleasure of seeing, &c.

So abundant indeed is the *Trigona Clavellata* that two slabs worked out by that clever Fossil demonstrator, Mr. Bishop Reynolds, have as many as 40 valves each displayed out with the minutest care.

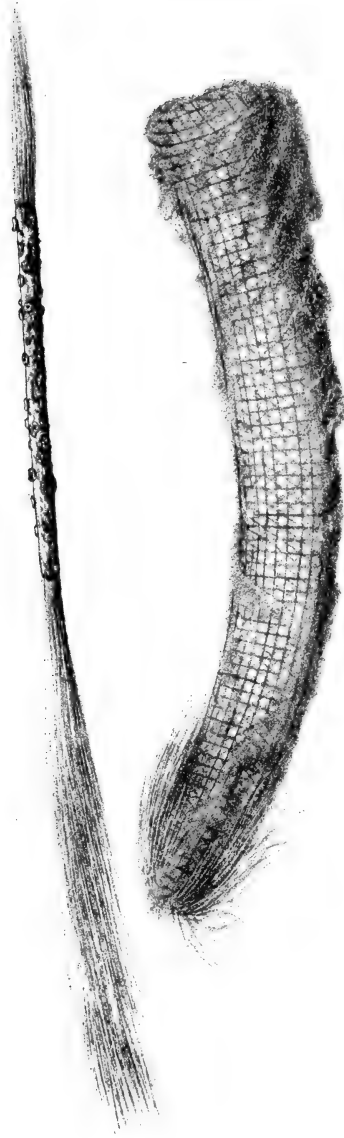
This subject is of interest to us, as it fixes a species, the name of which, until Dr. Lycett's Monograph was published, had been given to at least a dozen forms.

The great interest, however, consists in the fact of the large masses of individuals which are met with in different places.

This added to the perfect state of preservation presented by these fossils make this species one of your most interesting of oolitic fossils.

Our county is rich in *Trigonias*, and as a prize is offered to the King's School for a paper on the different forms which occur in the inferior oolite of Dorset, we shall hope for as successful a working out of species as has already been done in the case of the genus *Astarte*—a paper on which will be found in the present volume.





HYALONEMA MIRABILIS, (GRAY) EUPLECTELLA ASPERCILLUM.



The Glass Rope Sponge.

HYALONEMA MIRABILIS (GRAY).

By T. C. MAGGS, M.G.A., &c.

IT has occurred to me that this very interesting sponge (which was given to me a short time since by Mr. Cape, of Exeter, who brought it from Japan,) may be new to some of the members of our club, and that its exhibition, with as much information concerning it as I have been able to gather, may have more than a passing interest.

This beautiful production of Nature has, like many of its kind, been the subject of much discussion. It was first described as of vegetable origin, under the name of "glass plant." Subsequently Professor Ehrenberg and others regarded it as an artificial production with which the Japanese sought to impose upon the credulity of the "modern barbarian," but it is now recognised as the type of the genus *Hyalonema*, a form of sponge, and named, by Dr. E. Gray, *Hyalonema mirabilis*.

The general notion of a sponge is derived from the substance used for domestic and toilet purposes. The sponge before you, of which I am about to give you a brief description, would scarcely be recognised by the ordinary mind as related to the sponge of commerce; nevertheless, such is undoubtedly the fact. The simple sarcodous substance which in one case weaves a soft, leather-like, reticulated structure, in the other elaborates a silici-

ous skeleton composed of spicula of varying size and outline, some like long threads of spun glass, a foot or more in length, whilst others do not exceed the thousandth part of an inch.

For the following description I am indebted to Mr. F. Kitten, of Norwich, who writes.—“The *Hyalonema*, or ‘glass rope’ sponge, was formerly supposed to belong to a class of organisms called axiferous zoophytes, or barked corals. The ‘glass rope,’ with its ‘warty bark,’ was supposed to have been distinct from the sponge-like mass, forming the base, in which it appeared to grow. Dr. Gray describes it as having a silicious axis:—‘The axis formed of many twisted fibres, and its lower end, instead of being expanded, is gradually tapering; and is parasitically embedded in a fixed sponge. . . . The part above the base is in different specimens covered to a greater or less extent (and evidently in the perfect state is entirely) with a kind of leathery bark, with truncated, nipple-shaped, scattered tubercles, having flat crowns with radiating grooves and a central depression. In general the specimens are withdrawn and cleaned from the spongy base, and the lower axis is cleaned; but it appears evident that they all are attached to such a sponge in their natural state. The bark is formed of two distinct layers, the outer layer having the appearance of an aggregation of grains of sand, united together by a small quantity of animal matter; the inner layer having embedded in its substance numerous very fine capillary fibres of precisely similar texture to those which form the axis of the coral, but of much smaller size; and this portion of the bark evidently extends between and invests each of the fibres of the rope-like axis.

Dr. Gray’s description is exact, so far as the external appearance of the sponge is concerned; but his surmise that the so-called spongy base is a distinct organism recent observations have proved to be incorrect. The basal portion is an integral portion of the sponge, and, when growing, is uppermost, the long fibres being buried in the ooze, as in the allied forms *Phæronema* (*Holtenia*) *Carpenteri* and *Phæronema Grayii*.”

As before observed, the earliest known specimens of this

sponge were brought from Japan, but within the last few years other habitats have been discovered. Professor Perceval Wright found it *in situ* in Setubal, off the coast of Portugal, in 1868, obtaining many fine specimens from the same locality, and had the opportunity of examining them whilst alive. He states that the silicious stem is truly part of the sponge mass, and that the "Polythoa" (bark) was simply parasitic upon the stem. Some of the Setubal specimens were very large, the stems of several measuring nearly two feet in length, and the head consisting of a somewhat oval mass about eight inches in the long, and four inches in the short, diameter. On opening out the sponge the interior concave surface was found to be lined with a delicate network of spicules and sarcode. A number of large openings (oscula) were also seen, and these were covered with a network of sarcode, and the edges of the meshes thickly covered with spicules, called by Dr. Bowerbank "spiculate cruciform spicules."

The Professor then goes on to say that he has "seen the parasitic polythoa in a living state on the silicious axis of the *Hyalonema*, and that he watched the polyps expand their tentacles, after the fashion of any other zoantharian, to prove that, though they have mouths, these mouths are their own, and not at the service, directly or indirectly, of the *Hyalonema*." Dr. Bowerbank is, however, of opinion that the Polythoa is a portion of the sponge, and not parasitic:—"The evidences in favour of the latter supposition are (at least as far as I have been able to ascertain)—first, that the glass rope has never been found without the 'bark;' secondly, the spicules are silicious (in all other spicule-bearing species of Polythoa they are calcareous), and that some of them are common to every portion of the sponge; neither am I aware that the Polythoa has ever been found investing any other organism."

The spicules in this sponge are perhaps more beautiful and varied than in any other sponge hitherto discovered. Mr. F. Kitten then proceeds to figure and describe the spicules, adopting the terminology used by Dr. Bowerbank in his work on the British *spongiadae*. He then says, "Having had an opportunity

of examining a series of specimens belonging to the Rev. J. Crompton, of Norwich, three of them being of considerable interest, as throwing light upon the parasitic nature of the Polythoa. One of the specimens was almost entirely divested of the parasite; but near the top was a small piece of some frondose alga, attached, or rather entangled round the glass rope by several tendril-like filaments, the surface of the fragment being covered with the Polythoa, identically the same as that found investing the 'rope.' The other two specimens are still more remarkable. The Polythoa covers the rope, but beneath it may be seen, in one specimen, a piece of fine twine, and, in the other, a piece of blue paper or cloth. The twine and paper had evidently been wound round the rope in order to keep the filaments together, and the Polythoa (apparently attached to some riband-like alga, about three-quarters of an inch in width) wound round afterwards. This was probably done by some of the Japanese fishermen who dredged up the specimen."

In the April part of "Annals of Natural History" for 1872 Dr. E. Gray writes:—"Mr. Kitten does not seem to be aware that *Hyalonema* is more common without its parasitical sponge at top than with it; but the specimens with the sponge were formerly more sought for by travellers and brought to England, whilst the Russian specimens, being collected by naturalists, were chiefly without this parasite, and now we constantly receive them without any appearance of sponge, covered with living polyps up to the tip."

In reply to the above remarks by Dr. Gray, Mr. Kitten says:—"I am still unconvinced of the parasitic nature of the sponge, or that the Polythoa is non-parasitic. Until I saw the specimens belonging to the Rev. J. Crompton I was very much inclined to believe that Polythoa was an integral portion of the sponge; but when I saw it growing on the alga, as stated, and this not entangled on the glass rope (anchoring spicula), but carefully twisted round it, and below it some fine twine, I could only come to the conclusion that the long anchoring spicula did not belong to the Polythoa."

My reasons for considering the sponge and rope as one organism are that many of the forms of spicula occurring in the heads of the sponge are also found between filaments forming the rope, particularly the spiculate cruciform, the attenuated rectangulated, hexradiate, and the multihamate birotulate spicules. The occurrence of long anchoring spicula in *Pharonema Grayii* and *Pharonemi Carpenteri* is, I should imagine, very conclusive evidence that the rope in *Hyalonema* is a portion of the head.

Dr. Gray says he supposes I am not aware that specimens of *Hyalonema* occur more frequently without than with its parasitic sponge. This is very probably correct; but they have no doubt lost the sponge, either from the decay of the sarcode, or from being pulled off by the dredger or diver; in the former case the rope, when divested of its spongy head, would in all probability soon be invested by the parasitic Polythoa. Dr. Perceval Wright, who has had the opportunity of examining specimens in a living state, is quite satisfied as to the parasitic nature of the Polythoa.

Having thus spoken of the glass rope sponge *Hyalonema mirabilis* (Gray), I will proceed to give a brief description of the other beautiful and wonderful, but perhaps not so rare, a sponge known as "Venus' Flower Basket," or *Euplectella aspergillum*, certainly one of Nature's loveliest works. It consists of a tubular body, varying from six inches to a foot in length, and from one to ten inches in diameter, and is composed of a beautiful interlaced network of silicious spicules, with its base enclosed in a thick tuft of silicious basket-work. It is found in the seas of the Phillipine Islands, where it is known as the *Regadera* or "Watering Pot," and is still supposed by the inhabitants to be the workmanship of a crab, from the fact that one, and sometimes two, crab-like crustaceans are often found shut up in the hollows of the sponges. The lid-like covering of the upper extremity of the Euplectella is the portion of the skeleton last formed, so that the crab must make the sponge its habitation while it is open at the one end, and therefore must remain a prisoner for life, dependent for its subsistence upon any food that may gain entrance through the network of its prison.

These sponges are found at a depth of about 130 fathoms, in a mud bank, three miles from the coast of one of the Phillipine Islands, where they are dredged for by the natives. When taken out of the water they are of a dirty yellowish colour, but by washing in fresh water, and exposure to the bleaching influence of the atmosphere, they become a pure white, the condition in which they are usually brought into this country. The first entire specimen—that described by Professor Owen, in 1841, and now in the British Museum—was sold for £30; but of late years they have become more plentiful, and in 1867 were selling at between £3 and £4; but are now to be purchased at from 5s. to £1 each.

Whilst upon the subject of sponges it may be well to observe that domestic sponges are found principally in the Grecian Archipelago, although they are found throughout the Mediterranean. They occur at depths varying from shallow water to that of 30 or more fathoms; those found in shallow water being of the coarser kind, while those found at the greatest depths are the softest and best. Aristotle observed this fact and tried to account for it. He says, "In general those which grow in deep and still water are the softest, for the wind and waves harden sponges as they do other things that grow, and check their growth." They are obtained by diving, an art to which the inhabitants of the Grecian Isles and the surrounding coasts are specially trained from their earliest years, and dexterity in which is counted one of the first qualifications in a husband; while in some places it seems at one time to have been considered a scarcely less important female accomplishment, for Hasselquist tells of a somewhat similar custom in his "Voyages and Travels in the Levant," though rather differently applied. He says, "Himia is a little and almost unknown island directly opposite Rhode. It is worth notice on account of the singular method which the Greeks—the inhabitants of the island—have of obtaining their living. At the bottom of the sea the common sponge, *Spongia officinalis*, is found in abundance, and more than in any other place of the Mediterranean.

The inhabitants make a trade to fish up this sponge, by which they get a living far from contemptible, as their goods are always wanted by the Turks, who use an incredible number of sponges at their bathings and washings. A girl in this island is not permitted by her relatives to marry before she has brought up a quantity of sponges, and before she can give a proof of her agility by taking them up at a certain depth." To return to the qualifications of a husband, Pomet says, "The greatest part of the sponges that are sold come from the Mediterranean, and there is a certain island of Asia that furnishes us with a very large quantity of sponges. This island is called Icarus or Nicarus, where fathers will not allow their daughters to marry until the suitor can show that he can gather sponges from the bottom of the sea ; and for this reason, when any one would marry his daughter, a number of young fellows jump into the sea, and he that can stay longest in the water and gather the most sponges marries the maid ! These Icarian fathers evidently put little faith in being "over head and ears in love," unless it be accompanied by a fair development of the power to remain "over head and ears" in water.





On the So-called Fairy Pipes.

By *W. J. BERNHARD SMITH, Esq.,*
Barrister-at-Law.

THAT distinguished antiquary and Anglo-Saxon scholar, the late J. M. Kemble, once told me that he considered tobacco pipes as "the opprobrium of Archæologists." He meant that we knew so little about them. It was in reply to a remark of mine that I did not believe in the great antiquity of the so-called "Fairy Pipes" of Ireland, and that I thought such specimens as were said to have been found in tumuli in that country might easily have dropped out of the pocket of some labourer employed in the excavation. All such pipes from the sister island that I have seen are exactly like those found by thousands in the Thames, and wherever old ground is broken in London. I mean those with a very small bowl, much contracted at its orifice, and usually with a "milled" ring around it, and a pointed heel. Most of these pipes are, no doubt, of the 17th century. I have myself picked up scores of them at odd times whilst shooting over stubble and fallow in Berkshire and Oxfordshire, in places where fighting had been in the days of the great Rebellion. Still, my friend Mr. Kemble assured me that he himself had found pipe-bowls of exactly the same type in sepulchral cysts, where cremation had been practised in Pagan times. These cysts were found in the course of his diggings in the heather-covered moors of Hanover; they contained burnt bones, bronze objects, and he

told me he had found these pipe bowls with his own hands, when it was impossible that those of any other person could have placed them there in recent times. Iron pipes, some with lids, have been dug up in Switzerland, associated with objects of bronze. Of course, though I began by calling them "Tobacco pipes," I did not mean that Tobacco was smoked in them—other herbs might have been used, as coltsfoot is still occasionally in some out-of-the-way places. With regard to the typical form of the bowls, dug or ploughed up in such abundance in the vicinity of large English towns, for example, Stafford, Gloucester, Ludlow, and Broseley, still famous for their manufacture; I shall venture to call them "Gasterpods," from their broad foot, an allusion which I think my friend, Professor Buckman, at whose instance I have thrown together these few notes, will understand at once. *These* pipes we can understand well enough, for the marks of the makers are impressed on the foot, in relief generally, more rarely incised, occasionally with a date, always of the 17th century or later. These bowls are of more convenient form, and tobacco itself was, no doubt, smoked in them. It is hardly possible to smoke one of the type I have first mentioned with any degree of comfort, though I have often tried the experiment. The late R. Thursfield, Esq., of Broseley, had a fine collection of old pipes from Shropshire; I also had another, still larger, from various parts of England. Both are now in the possession of W. Bragge, Esq., the greatest collector of these objects, and the best authority on the subject, with whom I am acquainted. There is a common form of pipe with a long ungainly bowl, never bearing a maker's mark, which I am inclined to think is of Dutch origin, and to have come in with King William III.

NOTE BY THE EDITOR.—As I have had great pleasure in sending my kind friend, Mr. Bernhard Smith, collections of ancient pipes both from Gloucestershire and Dorset, as I knew him to be interested in them, I preferred a request that he should give me a few notes upon them for our Proceedings, and hence the preceding remarks. They are sufficient to show the interest attached to the subject. All over our farm, on the surface, and

at Sherborne, wherever any diggings take place, the small pipes have been found. Most of them are with the broad foot remarked upon by Mr. Smith, which foot is often impressed with perhaps the initials of the maker :—

WL MI ID

One example picked up at Bradford seems to have a lengthened inscription, but not perfect enough to be made out. Most of the examples have this broad rounded foot quite plain, without any letters or inscription whatever. The pipes with the broad foot are usually very small, and have a crenulated ornament around the outside of the bowl. Another form is common with a small pointed base at the bottom junction of the bowl with the stem. In these the bowl is usually larger than the previous ones, and in shape nearer those of the present day. The stem is longer—the bowl of the pipe is quite plain. In one example—and only one—we have the small bowl contracted and milled with the small pointed heel, and a tube 5 inches long. We have before us a collection of 20 examples, as follows :—

The small contracted bowl and broad foot, with letters on the foot	..	5
Ditto, without letters	.. .. .	10
With larger plain bowl and pointed base	.. .. .	4
With small, crenulated bowl, long stem, and pointed base	.. .. .	1
		<hr/> 20 <hr/>

What would be the tale of those sent away I cannot say ; but to me this enumeration is curious, as showing that the more ancient form known as the "Fairy pipe" is the most common. The first or the smaller bowls belong to those called in the country the "Fairy pipe," and it is supposed they point to a period when the fragrant weed was very scarce, and perhaps, too, a time when it was used with great caution and hesitation, the notion being to "Snatch a fearful joy," as Gray so eloquently puts it. As the custom became more common, it would seem that the bowls were made larger, but it is curious to note that these supposed more commonly-used bowls are not met with so often as the smaller ones, and it is still more interesting to note that the modern pipe is not found about our fields so often as are the fairy ones. We quite agree that the subject is curious and interesting, and if our members will kindly preserve all the bowls they may pick up, our Society may do something to remove the "opprobrium of Archæologists."

J. BUCKMAN.

TR EK * T.F WC W.S WS CB

Marks on Pipes by J. BERNARD SMITH, Esq., mostly from the
Midland Counties.

RB IH M RL T.I CR C.R PC

H3 MD WH F.E MD TI

IOH TH
NHV MAS
NT HVNT
I.P THOM
EVANS
C.R *
W.B *

IL O .. F D .. M W .. W

IOS HVG HES	IOHN IONES	IOHN LEGG	WILL LEGG	RICH LEGG
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WILL DAR BEY	MICH BROWN	IOHN ROBERTS	IOHN ROB ERTS
		IOSEPH HVGHES	





The Botany of a Dorsetshire Parish.

By the Rev. H. H. WOOD, M.A., F.G.S.

IN giving an estimate of the number of plants found in any particular county or district it is necessary, in the first place, to specify the system of nomenclature which has been followed; otherwise the enumeration can be of little or no use for the purpose of comparison with the Flora of any other county or district. For whilst one authority is given to magnify small differences until, in his eyes, they assume the proportions of species, another, in avoiding this Charybdis, falls into the Scylla of generalizing to such a degree that he has no little difficulty in acknowledging any such thing as a species at all. As instances of these widely different methods of procedure, when applied to English Botany, I may mention the latest edition (1874) of the "London Catalogue of British Plants" and the "Handbook of the British Flora," by Mr. Bentham (1865). If we follow the first authority we have in our Flora (excluding the Characeæ) 1,665 species; whilst, if we take Mr. Bentham for our guide, we have only 1,292—a difference of no less than 373 "species."

The person responsible for the present form of the London Catalogue is Mr. Hewett C. Watson, one of the very best botanists in England, who in his most valuable work, "Compendium of Cybele Britannica," published in 1875, allowed no more than 1,428 species. But he has now been persuaded into following a suggestion made to him by another "competent and judicious botanist," which is to this effect:—By all means

give each sub-species a separate number, and when in doubt give the sub-species the benefit of the doubt." Now this might have been all very well if these "sub-species" had been labelled as such; but on the face of the Catalogue there is nothing to deter a simple youth from supposing that each of them differs as widely from his neighbours on either side as, let us say, a delicious Hautbois from a common Bramble. And, therefore, if, in the politics of Macedon, it was allowable to appeal from Philip drunk to Philip sober, we may surely follow an analogous rule in the matter of our English Flora.

The groups in which the widest differences of nomenclature are found are the Hieracia, the Willows, the Brambles, and the Water Ranunculus. Beginning with the Brambles, the species now given in the London Catalogue are copied from Professor Babington's elaborate work on the "British Rubi." The species thus taken are 44 in number. In Mr. Bentham's work there are only 5—his *Rubus fruticosus* including the other 39. But a foreign botanist, M. Genevier, has persuaded himself that the forms or species of *Rubus*, to be found in the valley of the Loire, are not less than 203. Now, what does Mr. Watson himself tell us in his *Compendium*? After confessing that "botanists are not held in over-reverence by the outer world, and that collectors of Brambles are often rated very low, even by botanists," he thus disposes of the Professor:—

"Professor Babington writes, p. 22:—"I believe in the distinctness of species, although unable to demonstrate it." But in whose species of Rubi are *we* to believe? In the 200 of M. Genevier? In the two score of Professor Babington? In the two units of *fruticosus* and *cœsius* of Mr. Bentham's handbook?" (p. 504).

With this may be given a paragraph from a review of the Professor's work in the *Journal of Botany* for October, 1869:—

"We cannot see that the 203 species in the one case [M. Genevier] individualized and defined in perfect good faith, as the deliberate result of the labour of many years, cover a wider

range of form, in a materially greater degree of variability within that range, than the 43 species of the other."

Next I may take the Roses. Here, again, the specific names are borrowed from Mr. Baker's monograph of the British Roses. But in this case a different rule is followed, and the arrangement is under 13 groups—one of them, *Rosa canina*, being credited with 29 varieties. Bentham only allows five species in all; whilst Professor Babington, omitting two, since admitted not to be British, gives 17. What Mr. Watson seriously thinks of the value of Mr. Baker's species, we find in his "Compendium." After pointing out the differences between the Bakerian names as given in 1864 and 1869, he says:—

"These uncertainties show that the various forms of our wild roses are so connected by the interchange and crossing of technical characters, only imagined to be diagnostic between them, that the book species really depend on an arbitrary preference given to *this* or *that* set of characters, as indicating affinity, and as necessitating union or severance. Contrast the diagnoses of *rubiginosa* and *micrantha*, for instance; and then compare the description of their varieties with the words of their specific diagnosis. It will be seen that the diagnostic characters of one species appear as the varieties of the other species" (p. 507).

But if Mr. Watson now accepts Professor Babington and Mr. Baker as infallible authorities in their respective dominions, he begins to apply a method of selection in the matter of the Hieracia, which he tells us are taken "*almost exclusively*" from Mr. Backhouse's work, "British Hieracia." The London Catalogue gives 35 species, Mr. Bentham only 7.

If, however, there are materials more or less complete for determining the value of names in the groups already mentioned, what shall be said of "*Ranunculus aquatilis*"? Instead of the single species of Bentham, we have in the London catalogue 8 forms given as species, with 10 varieties. The Compendium allows only four, the number which Ray had given in his Botany. "On the whole," says Mr. Watson, "it may be said

that circinatus and fluitans are now familiar to most botanists, and that they are seldom confused with the other two unless by beginners. But as to the limits and distinctions between heterophyllus and pantothrix, or between the two groups of Segregates into which they are cut up, these may still come under the showman's liberally given choice to the childish minds, 'which you please, my little dears' "(p. 430).

Whence, then, has Mr. Watson derived his present inspiration? It is from an elaborate paper of Mr. Hiern in the *Journal of Botany*, February, 1871.

He does not, however, take Hiern's list in its entirety, but gives a selection as far as he *can understand the names*; and as no descriptions could be given of the varieties retained out of Hiern's 21, or reasons given for the omission of the rest, we are left pretty much in the dark as to what is meant by the names in the Catalogue. A reference to Hiern's own monograph will not help us much, for he thus describes his method of determination:—"Each species is placed in a given plane with reference to two axes of co-ordinates, the abscissa being the same number of units of length as the normal number of Stamens, and the ordinate being the number of veins on each petal. After being placed in this manner, those numbered 1—5, Bab., lie in a straight line whose equation is $x-4y+11=0$. Those numbered 6—8, in a parallel straight line, whose equation is $x-4y+6=0$; and the remaining four, 9—12, in a third straight line, whose equation is $x-y=4$.

Let me give one practical comment on this learned trifling. A large specimen of one of these forms of *R. aquatilis* was somewhat maliciously cut in two and submitted to one of these "competent and judicious authorities." One of the two portions, when returned, was found to be labelled radians, the other Godroni. To be sure they are allowed, even at head-quarters, to be only varieties of diversifolius; but who can put much faith in "varieties" after such a warning?

Some other sentences in the Compendium are so wise that I cannot help quoting them:—

"Partly owing to more exact discrimination, but it may be feared chiefly under a weak-minded craving for name—notoriety, the modern system is to subdivide species on differences so slight and uncertain that descriptive language now almost fails to make them intelligible to other botanists without the aid of portrait figures or selected specimens. To such an excess has this practice been carried of late that we now find in print long and worthless descriptions miscalled specific, made only from a single individual plant—say from a single fern frond, or from the dried twig of a rose, briar, or bramble bush. It would be almost as wise to describe an individual Hottentot or Eskimo, a Tom Thumb or a Daniel Lambert—a one legged Donato, or a three-legged baby, as a species distinct from the fair-skinned and two-legged *Homo Sapiens* (*Linn.*) of medium size." (p.p. 35-6).

"The tendency of this practice (segregation) must be to make book botany attractive only to the lowest class of minds which can engage in science at all—the minds which devote themselves exclusively to minute details, and which find their right vocation there, simply because incapable of anything higher" (p. 428).

But whatever objections there may be to the latest form of the London Catalogue from a scientific point of view, it still has its use. It is easily procurable; it is in the hands of nearly every possessor of an Herbarium; it is constantly quoted in natural history periodicals, and, therefore, it is a convenient book to use for purposes of Botanical comparisons between counties or districts. Testing the Dorset Flora by it, we see at once what reason we have to be proud of this portion of our natural history. When the admirable work by our President was in preparation an earlier edition of the Catalogue was all that was available, and the remark then made about our Flora was this:—"The preceding pages show that of the 1,428 British plants comprised in the London Catalogue, 989 have been found within the limits of our county, including 26 which are probably extinct and 68 aliens. There are also 36 sub-species and 44 varieties." But the new edition of the Catalogue enables us to give still larger numbers. After a careful comparison of the two lists I have

arrived at the following computation :—Dividing the plants into five classes, according to the frequency or rarity of their occurrence, we have described in the Flora of Dorset,

A. Generally distributed, or very common	..	289 species
B. Common	.. .. .	151 „
C. Frequent	.. .. .	280 „
D. Rare	.. .. .	237 „
E. Very rare	.. .. .	43 „

amounting in all, very curiously, to the exact number of 1,000 species. Besides this there are 30 species, probably once found in the county, but now extinct; five admitted through mistakes on the part of “authorities,” and two species now excluded from British lists. Four out of the five mistakes must be charged against Dr. Pulteney, namely,

Arabis perfoliata (a species of *Brassica*).

Trifolium ochroleucum (= *maritimum*).

Chenopodium glaucum (= *ficifolium*).

Euphorbia Stricta (= *platyphylla*).

Mr. Salter is responsible for the fifth, his *Crepis biennis* being, no doubt, the large form of *Crepis virens*, which is not uncommon in various parts of the county.

The two species now excluded are *Petasites fragrans* and *Cannabis sativa*.

Some very interesting additions have been lately made to our Flora, and there is some hope that a portion, at least, of the plants that once grew in the county may yet be recovered.* But in any case, I think it may confidently be asserted that it would be difficult to find any County Flora that surpasses our own in interest and variety, and that very few counties can at all compare with it.

If I take so small a portion of the county as the parish of Holwell as the subject of a local Flora, I am led to do so, among other reasons, because it has one special item of value—it is almost

* This hope has already been realized in three instances, *Polycarpum tetraphyllum*, *Euphorbia Peplis* and *Lycopodium Selago*, the second having been discovered by Mrs. J. Clark, of Street, the other two by our President.

entirely on the Oxford Clay. There are two isolated patches of other formations in it, but both of very trifling extent, one of Cornbrash, the other of sands belonging to the Calcareous Grit. Comparing the plants found here with those of the county generally, I obtain the following results:—Of the 289 plants described as “generally distributed,” the following, so far as I know at present, are wanting:—

- Fumaria officinalis.
- Helianthemum vulgare.
- Scleranthus annuus.
- Geranium rotundifolium.
- 5 Prunus domestica.
- Poterium Sanguisorba.
- Epilobium palustre.
- Callitriche stagnalis (*platycarpa*).
- „ hamulata.
- 10 Petroselinum segetum.
- Pastinaca sativa.
- Centaurea Scabiosa.
- „ Cyanus.
- Matricaria Chamomilla.
- 15 Filago Germanica.
- Senecio Jacobæa.
- Leontodon hirtus.
- Campanula rotundifolia.
- Atriplex Smithii.
- 20 Rumex nemorosus v. viridis.
- „ Hydrolapathum.
- Polygonum amphibium.
- Scirpus palustris.
- Eriophorum angustifolium.
- 25 Carex vulgaris.
- „ paludosa.
- Holcus mollis.
- Poa nemoralis.
- „ compressa.
- 30 Festuca elatior.

The absence of some of these is remarkable; but in the case

of others the doubt arises whether they should not really be placed in the next class.

Class B gives me 90 out of 151; class C 63 or, adding 10 as the probable number of Rubi which I have not ventured to label, 73 out 280; D not more than 12 out of 237; whilst the 43 of E are represented by a single species, *Euphorbia platyphylla*.

Thus the number of species found in Holwell up to the present time amounts to 435;* and as, probably, a dozen or so more have thus far escaped my notice, it will be seen that we possess in our little parish more than a quarter of the plants to be found in the whole of the British Isles.

There are, however, some deductions that ought perhaps in fairness to be made from this list. *Mentha Pulegium*, though now fast taking possession of a considerable portion of waste ground, is, no doubt, a garden escape; *Phalaris Canariensis* is a casual; and *Sedum album* must have been brought, though not at a recent period, to the wall on the Manor House, where two years ago it grew in profusion, though I fear it is now destroyed. *Parietaria diffusa* is only found on the walls of the same place; and in what was the farmyard are five plants which are waifs and strays of cultivation, *Tanacetum vulgare*, *Verbena officinalis*, *Geranium rotundifolium*, *Urtica urens*, and still more strange, *Lamium album*. Of this plant, so abundant in most places, I have only found a single specimen away from the Manor House, in a roadside ditch. *Lathyrus Nissolia*, which formerly grew in two localities, has for the present disappeared. Of the other specimens, at present unique, I must mention *Ranunculus sceleratus*, *Chrysanthemum segetum*, *Agrostemma Githago*, *Carduus nutans*, and I once had as a weed in my garden a single specimen of *Solanum nigrum*. The Cornbrash patch gives me three plants, *Circæa Lutetiana*, *Thymus Serpyllum*, and *Clematis vitalba*. I had noticed the profusion of this last

* To these must be added *Arctium minus*, not mentioned in the Flora of Dorset, and three "Colonists," *Trifolium incarnatum*, *T. hybridum* and *Lolium Italicum*.

plant in neighbouring parishes, and wondered at never having seen it in my own, till it struck me that it was only on limestone soils that I had elsewhere noticed it; and on going to the only probable locality I found it in profusion. The patch of Calcareous Sand did not, somewhat to my disappointment, contribute a single plant, though I examined it somewhat carefully, and I did get two species of mosses which I had not met with elsewhere.

I have myself seen the introduction of one plant into the parish—*Carduus eriophorus*. Just on the opposite side of the little nameless stream which forms our boundary for some distance is a field, in the parish of Bishop's Caundle, where it grew in abundance; but though thousands of seeds must have been carried off in various directions by the winds, I never saw a plant of the thistle in Holwell till two years ago. As it has "selected" a piece of waste ground for its new habitat, I hope it has a chance of life in the struggle for existence; and all the more, because there is a probability of its disappearing from the former locality through "improvements." These have already destroyed the only locality in my neighbourhood where I ever found *Samolus Valerandi*.

The river, which has at last been crossed by the thistle, has proved, so far, an insuperable barrier to other plants. I can stand at a particular locality and see half-a-dozen plants or so on the other side, on soil in every respect identical, not one of which occurs where I should like to find it; such as *Linaria spuria*, *Centaurea Scabiosa*, and even *Lamium album*.

If soil has anything to do with the colours of plants, as I suppose it undoubtedly has, it may be of interest to mention that I have found white varieties of the following plants on Oxford Clay:—*Primula vulgaris*, *Centaurea nigra*, *Carduus arvensis*, *Scilla nutans*, *Bartsia odontites*, *Scabiosa succisa*, and *Erythraea Centaurium*. One of the most beautiful varieties I have met with was of *Centaurea nigra*, with white rays and a red centre.

LIST OF PLANTS.

- Clematis vitalba.
 Anemone nemorosa.
 Ranunculus peltatus.
 5 „ diversifolius.
 „ Drouettii.
 „ hederaceus.
 „ Sceleratus.
 „ Flammula.
 „ auricomus.
 10 „ acris.
 „ repens.
 „ bulbosus.
 „ parviflorus.
 „ arvensis.
 15 „ Ficaria.
 Caltha palustris.
 Nuphar lutea.
 Papaver Rhæas.
 Chelidonium majus.
 20 *Corydalis lutea*.
 Sinapis arvensis.
 „ alba.
 Brassica Napus.
 „ *Rutabaga*.
 25 Sisymbrium officinale.
 „ Alliaria.
 Cardamine pratensis.
 „ hirsuta.
 „ sylvatica.
 30 Arabis thaliana.
 Barbarea vulgaris.
 Nasturtium officinale.
 „ palustre.
 Draba verna.
 35 Capsella Bursa-pastoris.

Lepidium campestre.

Senebiera Coronopus.

Viola odorata.

„ *hirta*.

40 „ *sylvatica* v. *Riviniana*,

„ *canina* v. *flavicornis*.

„ *tricolor*

Polygala vulgaris.

Silene inflata.

45 *Lychnis vespertina*.

„ *diurna*.

„ *Flos-cuculi*.

„ *Githago*.

Cerastium semidecandrum.

50 „ *glomeratum*.

„ *triviale*.

Stellaria aquatica.

„ *media*

„ *Holostea*.

55 „ *graminea*.

„ *uliginosa*.

Arenaria trinervis.

„ *serpyllifolia*.

Sagina apetala.

60 „ *procumbens*.

Montia fontana.

Hypericum Androsæmum.

„ *perforatum*.

„ *tetrapterum*.

65 „ *humifusum*.

„ *pulchrum*.

„ *hirsutum*.

Malva moschata.

„ *sylvestris*.

70 „ *rotundifolia*.

Linum catharticum.

- Geranium molle.
 „ dissectum.
 „ lucidum.
 75 „ Robertianum.
 Oxalis Acetosella.
 Ilex Aquifolium.
 Euonymus Europæus.
 Rhamnus catharticus.
 80 „ Frangula.
 Acer *pseudoplatanus*.
 „ campestre.
 Ulex Europæus.
 „ Gallii.
 85 Genista anglica.
 „ tinctoria.
 Ononis spinosa.
 „ arvensis.
 Medicago lupulina.
 90 Trifolium pratense.
 „ medium.
 „ *incarnatum*.
 „ *hybridum*.
 „ repens.
 95 „ fragiferum.
 „ procumbens.
 „ minus.
 Lotus corniculatus.
 „ tenuis.
 100 „ major.
 Vicia hirsuta.
 „ tetrasperma.
 „ cracca.
 „ sepium.
 105 „ *Sativa*.
 „ angustifolia.
 Lathyrus Nissolia.

- Lathyrus pratensis.
 Prunus spinosa.
 110 „ instititia.
 Spiræa Ulmaria.
 Agrimonia Eupatoria.
 Alchemilla arvensis.
 Potentilla Fragariastrum.
 115 „ Tormentilla.
 „ reptans.
 „ anserina.
 Fragaria vesca.
 Rubi (see below).
 Geum urbanum.
 Rosæ (see below).
 120 Cratægus Oxyacantha.
 Pyrus Malus.
 Lythrum Salicaria.
 Peplis Portula.
 Epilobium hirsutum.
 125 „ parviflorum.
 „ montanum.
 „ tetragonum.
 Circæa lutetiana.
 Myriophyllum alternifolium.
 130 Callitriche verna.
 Ribes Grossularia.
 „ rubrum.
 Sedum album.
 „ acre
 135 „ reflexum.
 Sempervivum tectorum.
 Cotyledon umbilicus.
 Saxifraga tridactylites.
 Helosciadium nodiflorum.
 140 Sison Amomum.
 Bunium flexuosum.

- Pimpinella Saxifraga.
 Cenanthe pimpinelloides.
 „ crocata.
 145 Æthusa cynapium.
 Silaus pratensis.
 Angelica sylvestris.
 Heracleum Spondylium.
 Daucus Carota.
 150 Torilis Anthriscus.
 „ nodosa.
 Chærophyllum sylvestre.
 „ temulum.
 Scandix Pecten-Veneris.
 155 Conium maculatum.
 Hedera Helix.
 Cornus Sanguinea.
 Adoxa moschatellina.
 Sambucus nigra.
 160 Viburnum Opulus.
 „ Lantana.
 Lonicera Periclymenum.
 Galium verum.
 „ Mollugo.
 165 „ Saxatile.
 „ palustre.
 „ Aparine.
 Sherardia arvensis.
 Valeriana officinalis.
 170 Valerianella dentata.
 Dipsacus sylvestris.
 Scabiosa succisa.
 „ arvensis.
 Carduus nutans.
 175 „ crispus.
 „ lanceolatus.
 „ eriophorus.

- Carduus palustris.
 ,, pratensis.
 180 ,, acaulis.
 ,, arvensis.
 Arctium majus.
 ,, minus.
 Serratula tinctoria.
 185 Centaurea nigra (decipiens).
 Chrysanthemum segetum.
 ,, Leucanthemum.
 Matricaria *Parthenium*.
 ,, inodora.
 190 Tanacetum vulgare.
 Anthemus Cotula.
 Achillæa millefolium.
 ,, Ptarmica.
 Gnaphalium uliginosum.
 195 Senecio vulgaris.
 ,, sylvaticus.
 ,, erucifolius.
 ,, aquaticus.
 Bidens tripartita.
 200 Inula dysenterica.
 Bellis perennis.
 Tussilago Farfara.
 Eupatorium cannabinum.
 Lapsana communis.
 205 Hypochæris radicata.
 Leontodon hispidus.
 ,, autumnalis.
 Helminthia echioides.
 Tragopogon pratensis.
 210 Taraxacum officinale.
 Sonchus oleraceus.
 ,, asper.
 ,, arvensis.

- Crepis virens.
 215 Hieracium Pilosella.
 Erica tetralix.
 Calluna vulgaris.
 Fraxinus excelsior.
 Ligustrum vulgare.
 220 Erythræa Centaurium.
 Convolvulus arvensis.
 „ sepium.
 Solanum Dulcamara.
 Scrophularia Balbisii.
 225 „ nodosa.
 Linaria *Cymbalaria*.
 „ Elatine
 „ vulgaris
 Veronica hederifolia
 230 „ polita
 „ agrestis
 „ Buxbaumii
 „ arvensis
 „ serpyllifolia
 235 „ officinalis
 „ Chamædrys
 „ Anagallis
 „ Beccabunga
 Euphrasia officinalis
 240 Bartsia Odontites
 Pedicularis sylvatica
 Rhinanthus Crista-Galli
 Verbena officinalis
 Lycopus Europæus
 245 Mentha hirsuta
 „ arvensis
 „ Pulegium
 Thymus Serpyllum
 Calamintha Clinopodium

- 250 *Nepeta Glechoma*
Prunella vulgaris
Scutellaria galericulata
 „ *minor*
Ballota nigra
- 255 *Stachys Betonica*
 „ *palustris*
 „ *sylvatica*
 „ *arvensis*
Galeopsis Tetrahit
- 260 *Lamium purpureum*
 „ *album*
Ajuga reptans
Lithospermum arvense
Myosotis palustris
- 265 „ *Arvensis*
 „ *versicolor*
Symphytum officinale
Primula vulgaris
- 270 „ *officinalis*
Lysimachia vulgaris
Anagallis arvensis
Plantago major
 „ *media*
- 275 „ *lanceolata*
Chenopodium polyspermum
 „ *album*
Atriplex angustifolia
 „ *deltoidea*
- 280 *Rumex conglomeratus*
 „ *obtusifolius*
 „ *crispus*
 „ *Acetosa*
Polygonum Convolvulus
- 285 „ *aviculare*
 „ *Hydropiper*

- 285 *Polygonum Persicaria*
 „ *lapathifolium*
 Daphne Laureola
 Euphorbia Helioscopia
 „ *platyphylla*
 290 „ *Peplus*
 „ *exigua*
 Mercurialis perennis
 Parietaria diffusa
 Urtica dioica
 295 „ *urens*
 Humulus lupulus
 Ulmus suberosa
 „ *montana*
 Quercus robur
 300 *Fagus Sylvatica*
 Corylus Avellana
 Carpinus Betulus
 Alnus glutinosa
 Betula alba
 305 *Populus alba*
 „ *tremula*
 „ *nigra*
 Salices (see below)
 Pinus sylvestris
 Taxus baccata
 310 *Sparganium ramosum*
 „ *simplex*
 Arum maculatum
 Lemna minor
 Potamogeton natans
 315 „ *lucens*
 Sagittaria sagittifolia
 Alisma Plantago
 „ *ranunculoides*
 Orchis Morio

- 320 „ mascula
 „ incarnata
 „ maculata
 Habenaria chlorantha
 Spiranthes autumnalis
 325 Listera ovata
 Iris Pseudacorus
 Narcissus Pseudo-Narcissus
 Tamus communis
 Scilla nutans
 330 Allium vineale
 „ ursinum
 Luzula campestris
 Juncus conglomeratus
 „ effusus
 335 „ glaucus
 „ acutiflorus
 „ lamprocarpus
 „ supinus
 „ bufonius
 340 Scirpus lacustris
 „ sylvaticus
 Carex pulicaris
 „ vulpina
 „ divulsa
 345 „ remota
 „ ovalis
 „ acuta
 „ glauca
 „ præcox
 350 „ panicea
 „ sylvatica
 „ flava
 „ hirta
 „ riparia
 355 Anthoxanthum odoratum

- Digraphis arundinacea
Phalaris Canariensis
 Alopecurus agrestis
 „ geniculatus
 360 „ pratensis
 Phleum pratense
 Agrostis setacea
 „ canina
 „ alba
 365 „ vulgaris
 Phragmites communis
 Aira cæspitosa
 Avena flavescens
 „ pubescens
 370 „ fatua
 „ elatior
 Holcus lanatus
 Triodia decumbens
 Molinia cærulea
 375 Melica uniflora
 Glyceria fluitans
 Schlerochloa rigida
 Poa annua
 „ pratensis
 380 „ trivialis
 Briza media
 Cynosurus cristatus
 Dactylis glomerata
 Festuca sciuroides
 385 „ ovina
 „ rubra (duriuscula)
 „ pratensis
 Bromus giganteus
 „ asper
 390 „ sterilis
 „ secalinus

	„	mollis				
		Brachypodium sylvaticum				
		Triticum caninum				
395	„	repens				
		Lolium perenne				
	„	<i>Italicum</i>				
		Hordeum pratense				
		Nardus stricta				
400		Pteris aquilina				
		Lomaria Spicant				
		Asplenium ruta-muraria				
	„	Trichomanes				
	„	Adiantum-nigrum				
408		Ceterach officinarum				
		Scolopendrium vulgare				
		Aspidium aculeatum				
	„	angulare				
		Nephrodium filix-mas				
410	„	dilatatum				
		Polypodium vulgare				
		Equisetum arvense				
	„	palustre				
	„	limosum.				
Total number in the List		..	..	..	..	414
Add for Rubi, Rosæ, and Salices		..	..	..	..	24
						<hr/>
						438
						<hr/>





On some Diggings at East Farm, Bradford Abbas.

By Professor J. BUCKMAN, F.L.S., F.G.S., &c

ON first going over the lands of my present farm I was particularly struck with the fact that in most fields were found some interesting archaic remains. Worked flints, described in the present volume, and rude pottery, took us back to the Celtic inhabitants of the district, while remains of a more refined fictilia with tessellæ of pavements, roof tiles, as described in the previous volume, molars, &c., &c., testified to the fact of Roman occupation.

On breaking up East Hill with the steam plough remains of these kinds were turned up in such abundance that we determined to institute a systematic enquiry into their extent, and so having sent men to work with pickaxe and spade, we now lay the results before the members of the Club.

The field of enquiry is one of fifty acres in extent, on the north side of the hill to the East of Bradford, called East Hill; the first excavations were made near the middle of the field, as at this point bits of pavement and pottery were met with in abundance on the very surface of the turned-up soil.

ROOF TILES.

Here, after removing the surface soil, we came upon heaps of broken roof tiles, of the shape figured in our Proceedings.*

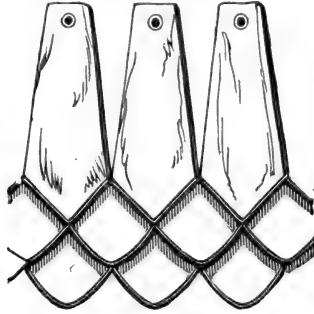


FIG. A.—ROMAN ROOF TILES IN POSITION.

These are made from the blue fissile slabs of the lias limestone, and no doubt they were brought from the adjoining county of Somerset. Some of the tiles had the nails with which they were fastened still remaining in their holes. They were found resting upon a surface of many square yards, which was roughly paved with slabs of the same kind of material.

ROMAN MOLARS.

On removing the soil from the floors we found the remains of several kinds of querns, of which the following, in granite, affords an interesting example:—

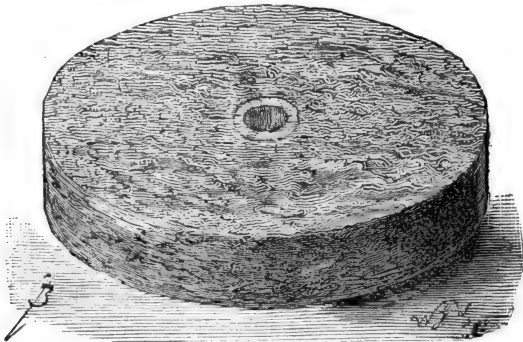


FIG. B.—ROMAN QUERN, OR HAND MOLAR OF GRANITE.

* Vol. i., p. 43, fig. B. This is here reproduced to show their form.

It is made of Cornish granite, probably brought from Dartmoor; it is twelve inches in diameter, and six inches thick, and is the only specimen of this material which we have found.

This, and a portion of a molar of a Volcanic Grit from Andernach, on the Rhine, and several parts of these early querns composed of Upper Green Sand, presented, when dressed, a biting tooth, that made them suitable for grinding purposes, not so, however, the next series, which were composed of different members of the oolitic formation, of which we have met with examples in Dorsetshire for the first time.

The annexed figure is of a perfect one of these, which though not dug up at the spot we have been describing was got from the same hill, probably turned out in removing the soil from a quarry:—

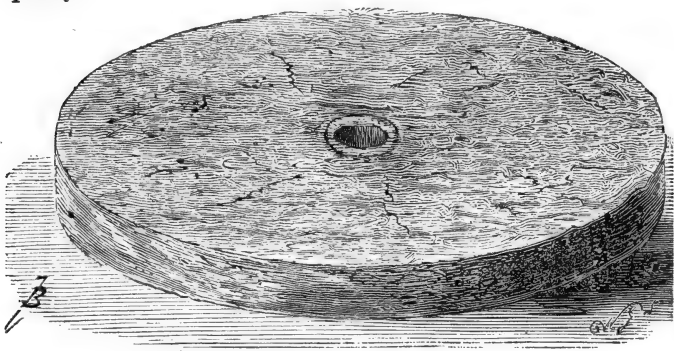


FIG. C.—A ROMAN QUERN OR HAND MOLAR OF GREAT OOLITE.

This perfect example was made from a block of Great Oolite, probably from the Bath district; it measures fifteen inches across, and is $4\frac{1}{2}$ inches thick. Like all our examples it was an Upper Millstone, the nether stone being far less frequently met with.

Portions of Molars of the Inferior Oolite from Ham Hill, and even from some of the coarser beds of this rock were got out of our diggings, and they are interesting as showing that where stone abounded, soft, and not the best lasting materials were

used for grinding purposes, as the more fitting materials (some of which were even imported from the Continent) must have been more or less difficult to obtain.

In pursuing our diggings there were found bits of Sarsen stone, and different grit stones, probably used for sharpening Celts and knives, portions of drains, and a various assortment of rough building materials.

BONE OBJECTS.

In bone objects, besides the usual remains from animals used as food, were found a flat bone rounded at the ends, which had probably served the purpose of an arm-guard from the bow-string; a rudely-shaped bone pin, and a prettily formed bone button or stud. Oyster shells of the commoner sort, probably from the Devonshire coast, were somewhat abundant.

Bits of Kimmeridge coal-rings of different sizes seem to complete the natural objects.

FICTILIA.

These consisted of some remains of a very rude kind of pottery, both black and red, that had been but very imperfectly baked. A kind of bead or spindle-bob of the same rough make. Some black pottery of better form and workmanship, with some red pottery, of which were examples from Martoria, the interiors of which were studded with small bits of quartzose pebbles, the better to assist trituration, bits of red, rare, red clay tiles, and other futile objects usually met with in poorer dwellings.

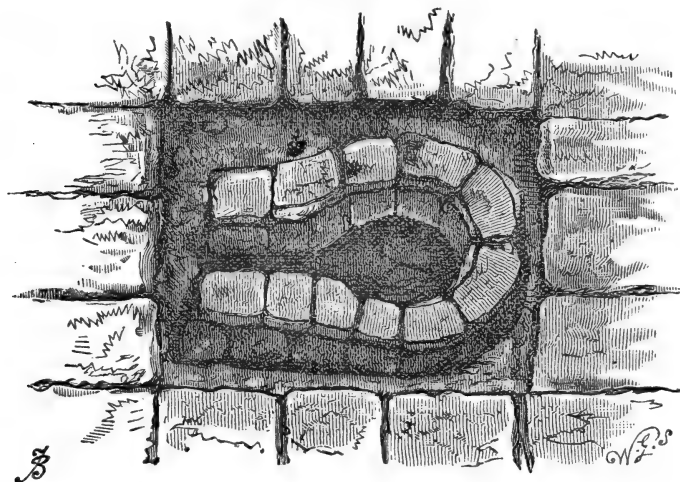
Lips of different vessels show the usual variety as regards form. Among the less common pottery were some bits of the Northamptonshire ware, but there was not even a brace of the so-called "Samian."

REMAINS IN IRON.

Of these, different formed nails were the most frequently met with, especially the common ones used for fastening on the roof tiles, bits of clamps, staples, and the like portions also of the usual Roman type of horse shoe—very flat and without the kalk.

COOKING STOVES?

On removing all the *débris* from the floors we came upon a curious structure, which we here figure:—



Our drawing shows a flask-shaped pit, narrow at the opening, and expanding at the closed end. This was built up of the oolite stones of the district, and covered at the top of this kind of wall with flat lias stones, and around this, for many feet square, was a pavement of the like stones.

Some two or three of these structures were found in the centre of the floors, while others were in the angles formed of rough foundations. They were all very much alike in shape and size, about two yards long and a yard wide; their interiors were blackened or reddened from heat, and its consequent different forms of oxidation of the iron in the materials, whilst a layer of carboraceous matter was found at the bottom of the pits.

These facts led to the supposition that they were employed for cooking stoves and bakeries. They might, however, have been used for baking the rough pottery previously described.

But whatever their object they are highly curious, and I think are here figured and described for the first time.

The five of them met with on East-hill seemed to mark as many distinct dwellings or sheds; they were at some distance apart, but in all the same kinds of objects were met with, so that they evidently mark a somewhat general use.

The foregoing remarks show quite clearly that we have not in this place hit upon a Roman Villa, but the few bits of pavement that were met with in our excavations and the quantity of scattered tessellæ lead to the inference either that we have not discovered its site or, if so, it has been removed by some previous workers.

We incline to the opinion that it will yet be discovered, for we cannot help thinking that this hill must have been occupied by early Roman settlers, and that the dwellings we have described were inhabited by Celts, who were their slaves or labourers.

That a Celtic people occupied this hill before the Roman occupation is certain, this seems to be proved both from the rude pottery we have described, and also from the quantities of flint implements which are found scattered over the fields.

The present paper then is only intended to mark what has already been accomplished, but it is hoped that much more may be done at some future opportunity.





On Stamped Glass Bottles.

By Professor J. BUCKMAN, F.G.S., F.L.S., &c.

IN our 1st Vol., p. 89, will be found an article on "Some Glass Bottles from Thornford." These were impressed with curious circular stamps which at once pointed to their ownership.

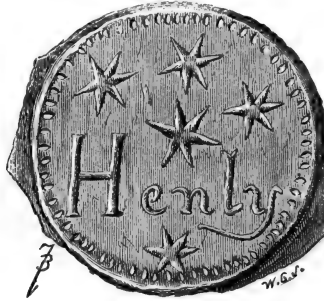
These were squat, big-bellied forms, with the stamp on the shoulder. They were of two sizes, one a pint, the other of the capacity of a quart. These bore a Baron's crest, and our figure is here reproduced for the purpose of greater clearness.



A BOTTLE FROM THORNFORD, HALF SIZE.

Besides this and the other examples figured we have since obtained two additional ones from Dorset.

A very interesting stamp was kindly communicated by C. W. Dale, Esq., found at Glanvilles Wootton, which will be best seen from the accompanying illustration.



BOTTLE STAMP FROM GLANVILLES WOOTTON.

The Henlys formerly lived at the Grange at Glanvilles Wootton. Sir Robert Henly died in 1758, and we are told by Mr. Dale that Lady Barbara Henley lies buried in the Churchyard at Glanvilles Wootton. The name, by Mr. Dale and in "Hutchings's," is spelled Henley, but in our stamp the latter e is omitted.

Whether our stamp belonged to Sir Robert or no we cannot pretend to say, but it seems to have belonged to a time prior to his death.

The next specimen from the district is here figured.



This was picked up by one of the men on our farm. It is one of a late date, but we hardly think it belongs to the parish of Bradford.

Compton Parish adjoins Bradford, and, indeed, part of our farm consists of land exchanged with Mr. Goodden, of Over Compton, and it is not impossible that the bottles stamped as figured belonged to a Robert Goodden.

Besides these, through the kindness of friend W. J. Bernhard Smith, Esq., of the Middle Temple, we are enabled to point, among others, to examples picked up in the Thames.

One probably meant as a reversed F as follows:—



Another with a crown for a crest and a complicated coat of arms with the word

‘PYRMONT WATER’

for an inscription, from which we gather that these stamped bottles were not always employed as wine decanters.

In this collection is a stamp found near Abingdon, Berks, with the inscription of

Fra
Thistlewasse
1716

This was doubtless a stamp from a big-bellied bottle.

The next two stamps are so modern that they are in use at the present time. One with the lamb and flag, as a crest surrounded by the words

MIDDLE
TEMPLE.

Ordinary wine bottles so stamped on the shoulder are still used by the benches for port wine.

We have before us an ordinary shaped claret or light wine bottle, with the following labels:—

CHATEAU YQUEM
HAUT SAUTERNES
GRAND CRU.

This we had recently from a wine merchant, so that stamped bottles are not yet gone out of fashion.

These objects are of interest as connecting the past with the present, and if as Mr. Way supposed they were the prototypes of decanters, they show that while they were supposed to occupy the place on the table for which the decanter is used, they were made in a measure more ornamental in shape, and in their heraldic and other insignia than the stamped bottles of more modern times.





On the Salts of Iron, illustrative of the Colours of Rocks.

By E. CLEMINSHAW, Esq., M.A., F.C.S.,
F.G.S

DURING combustion in air, elements combine with the Oxygen of the air, the combinations so formed being called Oxides, and supposed to consist of a certain number of atoms of the element united with a certain number of atoms of Oxygen.

These Oxides have, in many cases, the power of combining directly with water, and these compounds are divided into two classes—Acids and Bases. As familiar examples may be mentioned, Sulphuric, Nitric, and Carbonic Acids, and Potash, Soda, and Lime. The majority of acids may be supposed to consist of an oxide combined with water; others, as Hydrochloric or Muriatic Acid, consist of Hydrogen combined with another element. Acids and Bases have the power of acting on each other, forming a salt and water, *e.g.*, Carbonic Acid and Soda from Carbonate of Soda and water, Sulphuric Acid and Oxide of Iron form Sulphate of Iron and water. Salts, which contain Oxygen, may be regarded as a combination of the two Oxides, *e.g.*, Carbonate of Soda, as Oxide of Sodium and Carbon Dioxide, or as metal and Chlorine in the case of Chlorides, or Salts of Hydrochloric Acid. These salts

are sometimes soluble substances capable of crystallising from solution in water, and sometimes insoluble earthy powders, *e.g.*, Carbonate of Lime.

In the case of Iron and some other metals, there are two Oxides which are both capable of forming salts when acted on by acids. These Oxides of Iron are supposed to be composed of one atom of Iron combined with one atom of Oxygen, having the formula, Fe O , and of two atoms of Iron combined with three of Oxygen, having the formula Fe_2O_3 ; they may be distinguished as Protoxide and Peroxide respectively, and the salts formed by their action on acids as Protosalts and Persalts.

The protoxide and protosalts have the power of uniting with the oxygen of the air and passing into the state of peroxide and persalts; and, conversely, the peroxide and persalts may be *reduced*, *i.e.*, deprived of oxygen, by the action of substances having a strong attraction for oxygen, and are thus converted to protoxide and protosalt.

The protoxide and protosalts are as a rule but slightly coloured, generally being of a greyish, greenish, or pale sandy colour; while the proxide and persalts are much more strongly coloured, being generally of various shades between yellow, brown, and deep red.

Now the compounds of iron are almost invariably present in all rocks in varying proportions, the compounds being generally protoxide, protocarbonate, protosilicate, peroxide, and persilicate; and since the essential materials of the rock frequently have but little colour of themselves, the colour of the rock will frequently depend to a very considerable extent upon the kind of iron compound present.

The hydrated (*i.e.*, combined with water) protoxide, when freshly prepared by artificial means, is a greyish coloured precipitate, but on exposure to the air immediately begins to absorb oxygen, changing from a greyish to a greenish, and finally to a rusty-brown colour, eventually becoming converted into the hydrated peroxide.

The Protocarbonate is of very considerable interest with

reference to the colour of rocks. When freshly prepared it is a finely granular precipitate of a very pale brownish colour. Like Carbonate of Lime, it is soluble in water containing free Carbonic Acid; this solution, like those of other protosalts, is rapidly peroxidised when exposed to the air. The Percarbonate, however, does not appear to exist, and when the protocarbonate is peroxidised the hydrated peroxide is precipitated, since it is insoluble in Carbonic Acid solution, and Carbonic Acid gas escapes. This action may be noticed in every chalybeate spring, which springs contain the protocarbonate dissolved by the Carbonic Acid in the water; in the bed of the stream the hydrated peroxide, the result of the peroxidation of the protocarbonate on exposure to the air, is deposited in an ochreous layer. Again rocks, which contain protoxide of iron or protocarbonate, will weather of a rusty brown colour from a similar cause; the Carbonic Acid dissolved in the water which soaks through the ground converting the protoxide of iron into carbonate, and then dissolving it. When this solution is exposed to the air on the surface of the rock, it becomes peroxidised, and consequently the rock assumes a rusty colour. This may be noticed in several varieties of the Inferior Oolite rocks in the neighbourhood, which are of a pale brown or greenish tinge in the interior, but rusty-brown on the weathered surface.

The protosilicate is of a greenish colour. It is the cause of the green colour of the small particles which occur in certain sandstones, notably in the greensand formation. If, however, this protosilicate is absent, the sandstone will not be green at all, but is sometimes colourless, sometimes of a brown colour, from the presence of the hydrated peroxide.

The peroxide is the most important of the higher oxidised compounds of iron with reference to the present question. It occurs combined with water, as the hydrated peroxide, and uncombined with water as the anhydrous peroxide. In the former state its colour is of a rusty brown; in the latter the colour varies with the state of aggregation, varying from a rusty-red, brick-red, to reddish-black, or black in the crystalline condition.

When the hydrated peroxide is heated it loses its combined water, and its colour deepens considerably. This action may be noticed in brick-making, and in cases where rocks containing peroxide of iron have been subjected to heat. In the case of clay, which probably contains small quantities of the protocarbonate, the action of heat converts the protocarbonate into the anhydrous peroxide, the colour changing from grey to brick-red, according to the amount of iron in the clay.

The persilicate occurs chiefly in certain Felspars, in which it is combined with other silicates:—*e.g.*, red granite owes its colour to the red Felspar, which contains a certain quantity of persilicate of iron.

It is obvious, from what has been said, that iron compounds could scarcely be naturally deposited under water as proto-salts or proto-compounds, from the ease with which they are peroxidised. The persalts and peroxides can however be reduced (*i.e.*, deprived of oxygen) by certain substances, such as decaying animal and vegetable matter which have a stronger attraction for oxygen: it is probable therefore that the proto-compounds of iron occurring in sedimentary rocks have been reduced from the state of persalts and peroxides, in which state they would naturally be deposited, by the decay of the animal and vegetable matter deposited with the sedimentary materials.

We see therefore, that in the cases where the sedimentary rock would owe its colour to adventitious ingredients, if the iron compounds be present as proto-salts or protoxide the colour of the rock will be slight, or the iron compounds will have little or no effect upon it except in cases where the iron compound is present as protosilicate, in which case the rock will be coloured more or less of a greenish colour. If, on the other hand, the iron compounds are present as persalts or peroxides, the rock will be coloured reddish-brown or deep red, according to whether the peroxide is hydrated or not, and according to its state of aggregation, as in the Oolites of the neighbourhood of Sherborne and the New Red Sandstone of South Devon.



Daniel De Foe in Dorsetshire.

By THOS. B. GROVES, F.C.S., &c., &c.

THE name of Daniel De Foe, as an imaginative writer, is probably destined to immortality, yet of late years we have heard less of his works of fiction than of his political writings. The former have been to some extent displaced by modern highly spiced boy's books of travel and adventure, whilst the latter are, and will remain, valuable materials for the student of the history of the Revolution of 1689.

Recently the already very numerous printed works of De Foe have been added to by the publication of a long series of articles from his pen that hitherto had not been laid to his account, and the public interest shown at the unexpected find seemed to justify the putting into print materials even of a trifling nature that might throw light on the career of so notable a character as the author of the "True-born Englishman." De Foe was, it is well known, a strong partizan of the Dutchman, and his immediate successor, and a sharp thorn in the side of the Jacobite party. So sharp, indeed, was the thorn he inserted that he made for himself numerous and most virulent enemies, who more than once succeeded in clapping him in prison for the publication of supposed seditious pamphlets. His "Shortest way with Dissenters" were so regarded, and its appearance led to his arrest, followed by fine, pillory, and imprisonment during the Queen's pleasure. He was released in August, 1700. His

biographer, Chalmers, writes:—"The year 1705 was a year of disquiet to De Foe, not so much from the oppressions of State as from the persecutions of party. When his business of whatever nature led him to Exeter and other western towns in August, September, and October, 1705, a project was formed to send him as a soldier to the army, at a time when footmen were taken from the coaches as recruits. . . . When some of the Western justices, of more zeal of party than sense of duty, heard from his opponents of De Foe's journey, they determined to apprehend him as a vagabond. . . . In his absence real suits were commenced against him for fictitious debts, &c."

In his "Review, &c.," of July 17th, 1705, appears an advertisement with reference to these suits:—"Whereas of meer Malice, and with Design, among several other Mischiefs, to Load the Author of this with Entangling Suits, and Excess of Charges, several Actions have been Entred and Suits Commenced, some on Account of Trifles not worth naming, some for Debts after they are fairly Paid and Discharged, and some in Names of persons unknown to and unconcerned with the Author, who is made Defendant, &c. . . . if any real Debt can be made appear, for which such Actions are Entred he promises either to pay, or voluntarily to go to Prison till he can Pay them."

A variety of motives probably actuated De Foe in undertaking his journey westward, where, as he writes, "he suffered danger through the proceedings of foolish justices." His own business, that of a tile-manufacturer, might have led him in that direction in quest of suitable clay for his wares; moreover, he had the inducement of visiting his two daughters living in Wimborne, one Henrietta, the wife of John Boston, officer of Excise, the other Hannah, unmarried; both of whom now lie buried in the Minster.

But probably his chief reason for undertaking his 1,100 miles' ride was the acceptance of a commission from his friend Harley to visit the small and numerous Western Boroughs, in order to promote the election of Ministerial parliamentary candidates.

It might be mentioned that the borough then returned four members, and therefore was well worth the attention of De Foe supposing politics to have been the object of his visit.

However, on July 26th, 1705, occurs a series of entries in the Weymouth Records, containing the examinations of witnesses seeking to establish against De Foe and others a charge of plotting against the Government.

In his "Review," August 25th, 1705, he explains the occurrence thus:—That the Author of this Paper with but one Friend, and his Friend's Servants, being in the Western Counties of *England*, on a journey about his Lawful Occasions, met with several Unmanlike and Unreasonable Insults upon the Road; That at *Weymouth* his letters being delivered to a wrong Person, by Mistake, were showed about the Town. That a Friend having Wrote in one of them, as a Piece of News, and too true; That a certain Person had the Impudence to say in Defence of the High Churchman, *That the Queen had broke her Coronation Oath*, and the like—The Wise Mayor of the Town Examines all the People he found had Convers'd with him, and officiously carries them to *Dorchester*, before the Judges, the Assizes being at that Place.

It will be found that the wrong delivery of the letters was caused by confusing Capt. James Turner with Capt. Turner, and their misinterpretation can in some degree be accounted for by the fact that they were written in such ambiguous terms, and contained such queer expressions that not even the schoolmaster or the dissenting minister could make head or tail of them. The times being ticklish, and things in a state of transition, the Mayor, whom De Foe denounces as a Jacobite, thought it advisable to bring the matter before the higher authorities, then fortunately sitting at *Dorchester*, and thus remove from himself the responsibility of deciding so important a case. He probably also had heard of De Foe's escapades, and regarded him as a suspected person. The Mayor in question was Mr. Edward Tucker, a person of position, who, in 1702, was one of the members for the Borough of Weymouth and Melcombe Regis,

and subsequent to 1705 served the office of chief magistrate on several occasions.

As the evidence of the various witnesses contains here and there passages illustrative of the habits and manners of the time, which would be injured by condensation, I will reproduce them in the main in full. The first witness is "James Turner, of the borough and town of Weymouth and Melcombe Regis (commander of ye Diligence privateir), who, being examined, on his oath saith (vizt.): That on Munday the Twenty-third day of this Inst. July he the dep't had delivered him by Mrs. Dearinge ye wife of Edward Dearing postmaster of this place One packett of letters under a Cover which contained thre inclosed single Letters. The Direction on ye Cover was to Capt. Turner to be left at Mr. Fenner's a minister in Waymouth, and francked by letters thus (S. Barker). That in ye Cover was writt some Lines he this Dep't Cannot Remember. But ye Cover and ye Three Letters inclosed were all Delivered to this Dep't ye cover being open and ye inclosed letters broken open. In ye one of ye Letters Inclosed, Dated from Norwich, part of a paragraph was in these words, ye Queen hath Broken her Coronation oath; ye rest of ye Letters were filled up and Intermixed in sundry hands, within Lines, &c.; Termes he allowed no sense, or knew not what to make of it. That all that was mentioned of Turner's name was (my service to Capt. Turner). That haveinge shewed ye said Leters to several he was sent to on Tuesday last by Mr. Richard Arnold, the keeper (of) ye Bear Inn in Waymouth and went with the said Arnold to ye said Inn and Delivered the said letters unto a Gentm. who was a stranger to him; this dep't then in company with ye said Fenner (an Independent Minister in this place) called as this Dep't hath bin Informed Mr. Daniell Dufoe which said Daniell Dufoe's name was mentioned very frequent in ye severall Letters, who paid him, this D'pent, 6d. for postidge of a former Letter Directed as aforesaid. That Mr. Fenner joaked this Dep't about ye Letters and said it came from some of his wenches, or to that effect. That on Saturday last he had also a Letter Directed as ye former, but not francked

and in ye said Letter writt "they would contrive to get ye next ffrancked, which Letter he Looked on as a Trick as also they and therefore Did not give any informac'. Altho' in ye and first Letter was writt "Let them be burned and poxed wee will manage them well enough." That he also Delivered this Letter to ye Gentleman Called as he was informed Mr. Dan. Dufoe in p'sence of Mr. Fenner. That soone after he had delivered ye Letters, one Mr. Jonathan Edwards of this place came alone into ye Roome while ye Letters he this D'pint had Delivered (were) lying then on ye Table. The contents of ye severall Letters, they being so soone Required of him, he cannott more fully Remember, but only that in one of ye Letters was writt "the Mayor of Norwich had taken some person up or put him to trouble."

It will further on be seen that Captain James Turner had employed the schoolmaster to decypher the letters for him.

James Russell deposes to much the same effect, and "considering that one of the letters contained treasonable words, advised Captain Turner it was not safe to keep such Letters about him or words to that effect."

Richard Arnold, Inholder, "on his oath saith, that on Tuesday last two Gentn., who was strangers to this Dep't, one of which went by ye name of Capt. Turner, in company of Mr. Fenner, a minister of this place, sent this Dep't to call Capt. James Turner of this place to them at ye Beare Inn in Melcombe, and to bring with him ye Letters he had directed to one Capt. Turner to be left at Mr. Fenner's, a minister. That accordingly Capt. James Turner came with this Dep't and Delivered ye Letters to one of ye Gent'n, he thinks to that which went by ye name of Capt. Turner, but what ye contents of ye letters were he knoweth not."

Peter Johnson, of the B. and T., schoolmaster, maketh oath: "That Saturday ye 21st inst. he was desired by Capt. James Turner of this place to Read a Letter for him, which letter was Directed for Capt. Turner to be left at Mr. Fenner's, a minister in Weymouth. Ye said Letter was Dated Thursday

night nine a Clock, and had such Expressions in it (viz.) paragraph by paragraph, ye word Marshall, there will be ye Devill to pay for it, I advise you not to ride in ye heat of ye day; I will endeavour to get ye next Letter francked; give my service to Capt. Turner, and I wish you well to Weymouth; what places else you have to go to I will direct to ye post house. That ye Letter was writt in severall hands and intermixed with such Dark Expressions he could not make sence of it."

"John Fenner, of this place, Gent'n, maketh oath that on Saturday last Capt. James Turner of this place sent this Dep't a Letter Directed to Cap. Turner, &c., which Letter he this Dep't Read. Ye contents were of such uncommon and mixed Expressions this Dep't Remembers little thereof, and Lookinge on it as some Trick took little notice thereof. That on Tuesday last Mr. Daniell Dufoe and one that went by ye name of Capt. Turner (being at ye Beare Inn in Melcombe, Capt. James Turner being sent for by Capt. Turner), Delivered ye Letter that Dep't saw and some other Letters, ye contents whereof this Dep't saw not. But Mr. Dufoe said he cared not who saw them or if they were set up at ye Market Cross, or words to that effect."

"Phillip Taylor jun. of this place, M'ch't, deposed to having seen the letters and amongst other matters mentioned this paragraph:—"that one of ye Earle of Dysart's party did say that ye Queen had broken her Coronation Oath, or something to that effect."

The next entry is the Summons to appear at Dorchester—of course, a strictly *ex parte* proceeding.

Dorset Ss. Whereas, by Examination taken upon Oath before the Mayor of W. and M.R. it appears to me that Thomas Fenner, Minister, Captain James Turner, Mr. Daniel Dufoe, Captain Turner and Mr. Jonathan Edwards of W. and M.R. are persons that have Corresponded with severall disaffected persons to the Government and have received Letters of Trayterous designs against her Majesty. THESE are therefore in her Maj'tie's name to command you and every of you to bring before me on Saturday the Twenty Eight day of this Instant July, by

Eight of the Clock in the morning at my Lodging in Dorchester the said persons, to answer such matters as shall be objected against them on her Maj'tie's behalf. Given under my hand and seal the vj th (? 26th) day of July, Anno D'ni 1705.

(L. S.)

Ro. PRICE.

This was addressed "to the Mayor, Bayliffs, Constables and other Officers of W. and M.R. and every of them."

The Rev. Canon Bingham very kindly, at my request, searched carefully the orders and also the minutes of the Dorset County Sessions for 1705, but was unable to find any entry referring to Dan. De Foe.

We are, therefore, compelled to accept what De Foe himself says was the result of his interview with Ro Price at Dorchester. It is as follows, being the continuation of a previous quotation, "where the Impertinence being discovered, the Mayor was sent back, the Gentlemen Dismiss'd, and the Wise Magistrate thought it his Duty to send up a letter to the Court to inform her Majesty's Secretaries of State what an Officious B—— was trusted with the Government of that Corporation."

To the news of this affair De Foe attributes his further persecution at Exeter, Bideford, Crediton, &c., where also "foolish justices" chanced to be in the ascendant.

On the same date (Aug. 25) his "Review" contains the following uncomplimentary passages, referring to the same affair, "Peace-making being therefore such a dangerous Thing in this Age, I advise all People to have a Care how they meddle with it: *Memento Mori*, Gentlemen: whoever attempts to persuade the High Church to Peace let him please to accept the following Cautions.

1.—Let him not come near the Town of *Weymouth*, in Dorsetshire, lest the Worshipful Mr. Mayor cry out, *A Presbyterian Plot*: and not daring to meddle with him Personally shall put all his Hearsays, Supposes, and Drunken Evidences together and carry all the Honest People he can find that Converse with him to *Dorchester* before a Judge, where accusing the Peace-

maker of a Phanatick Plot, and a Bloody Design to perswade Folks to a Peaceable Rebellion, he oomes Home with a Flea in his Ear, much about as wise as he went. . . . Of these, whether Mayors, Country Justices, F——s, or Exeter Aldermen; I say, as the Text in another case, "*What means the bleating of such kind of Cattel*, and the Reply will hold, they are reserved for a sacrifice—A wise man ought to Sacrifice them all to his Peace, *that is*, not concern himself at any thing they say or do; but looking on them as a sort of despicable, or as they say in that Country *Maz'd Men*, pass on to the Great Work before him, without disturbing himself about them."

Here I ought properly to conclude this article, but as I happened to light upon a couple of entries in the "Reviews," which, though not very pointed, are truly local (having appeared July 28th, 1705), I will here reproduce them; my excuse being this, they were thought worthy of publication by De Foe.

"To tell us of the Danger of the Church of *England*, from a *Protestant* Queen; a Queen ever Professing, ever Practising, ever Piously Adhering to the Church of England's Principles, has so much contradiction in it, is so Rude and Absurd, that it really exposes our own Party to the Ridicule and Contempt of the meanest People in the Nation. And I'll tell you a short Story, just happening upon the Spot on the occasion of Talking of this very Head. Writing this in the House of a Friend, whether (*sic*) High Church Malice, had obliged the Author to Enter into some debate about the Government and the like, there happened to be, *another Fool beside your humble servant*, I mean an Idiot, who hearing the Discourse, ask'd presently If the Queen was *Turned Papist*? *Why so*, Jack, says his Master? *Because that Ugly Book (?) says he, tells you she is Weaned from the Church*; *No*, Jack, says his Master, *the Queen is a good Churchwoman*; *Why then*, says Jack, *that man must be 'a Fool to think the Queen should pull down her Church; for then she must Tumble Down with it.'* Not so bad for an idiot!

Some County Antiquary might possibly be able to identify the

persons obscurely and it must be confessed uncharitably alluded to in the following passage.

“ This is like a certain Gentleman’s pretending to write gratis merely for the good of that Church, and to receive no Gratitude, &c., on this account ; and a certain Clergyman near the County of *Dorset*, who own’d to have Collected neer to £100 among the High Church Gentry, to make him a present for his good service, since the Author (the gentleman) must be a Lyar or the Parson a Thief ; for if the Author has not receiv’d it, the Parson has Cheated him of it ; and if he has, his former Allegation must be false.”

That Queen Ann was strongly suspected of harbouring designs antagonistic to the Church is shown by the following quotation from the “ Review ” of Aug. 18th, 1705.

“ The Queen’s Health, says an Honest Gentleman at his Table to some of his friends ; D——n these *Presbyterian* Healths says the Person Drank to ; I’ll Drink none of them, Here’s a Health to the Church of *England*.”

It would be superfluous to enlarge on the points of this narrative.—De Foe seems to have met the fate of all sincere reformers. I will only add that the capricious use of capitals and italics is not due to me, but to the several authors. The spelling also is somewhat archaic here and there.





The Cherry.

By EDWIN LEES, Esq., F.L.S., F.G.S.

NOW, as to the common Cherry Tree (*Prunus cerasus*, or *Cerasus avium*) that you inquire about. It is at present abundant in many of the upland woods both of Worcestershire and Herefordshire, so that an observer might well consider it as indigenous, and Selby says "it is allowed to be indigenous in many parts of continental Europe, and considered also by many to be so in England, as well as in Scotland." But then Pliny tells us that the Cherry was first brought to Rome by Lucullus, from Pontus in Asia, and after the Mithridatic War a Cherry Tree laden with fruit was borne in procession at the triumph of Lucullus. Pliny further says, "In less than one hundred and twenty years after the conquest of Pontus, other lands had Cherries, even as far as Britain." Thus it would appear that the Romans introduced the Cherry to Britain, and certainly it is spread about by birds very much in the present day. That birds do carry the stones about is clear, as I have noticed quite a group of young Cherry Trees on the top of the battlements of Newland Church in the Forest of Dean, Gloucestershire. The author of "The Woodland Companion," says the Cherry is "often found within the hollow trunks of old willows, into which the stones have been dropt by birds."

I never noticed any perfected fruit on the wild Cherry in the Midland counties, but in Cornwall a wild variety produces a

small black fruit, which is called "Mazzards," and the country people bring these to market for sale. Selby and Withering say that the wild Cherry bears the name of "Gean Tree," but I never heard this name applied myself.

I cannot say much as to any old and remarkable Cherry Trees, but in my "Malvern Botany" I have mentioned "a very large and tall tree with drooping branches," on the edge of a wood at the bottom of Purlieu-lane. This was eight feet in circumference. Mrs. Hey, the author of "Sylvan Musings," alludes to "remains of aged Cherry Trees still visible in some of the old Abbey Gardens," but does not give their dimensions. She also says, "There are some very fine specimens of the Wild Cherry in the neighbourhood of our English lakes, especially near Rydal Water; one or two of which measure seven or eight feet in circumference near the ground, and rise to a proportionable height." I have not seen or read of any Cherry Tree that equals the dimensions of the monster at Compton, which, therefore, deserves record. In the Cherry Orchards of Worcestershire are some old nearly worn-out trees, but none of these exceed eight feet in girth.

Selby, in his "British Forest Trees," says, "To the specimens mentioned by Loudon, the largest of which seem to average about nine feet in circumference, we may add several trees at Dunston Hill, near Newcastle-on-Tyne, the seat of Ralph Carr, Esq., one of these growing upon the lawn measures seven feet in circumference at two feet from the ground, and three others in a small plantation, are respectively five feet six inches, five feet three inches, and four feet eleven inches in circumference, with a height of upwards of fifty feet." Selby also states that "the Gean, or Wild Cherry, frequently attains a height of from 60 to 70 feet in the course of fifty or sixty years, with a trunk of proportionate size, and large enough for all general purposes; in this state its wood is of great value, being of a firm, strong texture, red-coloured, close-grained, easily worked, and susceptible of a fine polish." The smooth rind of the Cherry Tree is said formerly to have supplied a tablet for lovers to make notes

of admiration upon, intended to be read by their sweethearts—

“Thy words on cherry bark I’ll take,
And that red skin my table-book will make.”

At present, in England, in the woods where the wild Cherry Tree grows, it adds to the beauty of the vernal woods by its clusters of white flowers, which are very beautiful, appearing as they do with the migratory birds—a poet says :

“Better far
Than boughs with fruitage crown’d, the dazzling wreaths,
Which deck yon wilding Cherry, white as snow,
Save where a faint soft blush, all but invisible,
Steals o’er the whiteness.”





The Species of *Astarte*.

(PREPARATORY NOTES.)

By Professor J. BUCKMAN, F.G.S., F.L.S., &c.

THE following paper is the result of the offer of a Prize of Books to the amount of 2 guineas by the Dorset Natural History and Antiquarian Field Club to the Sherborne School, for the best description of the species of the genus *Astarte* to be met with in the Inferior Oolite of Sherborne and its neighbourhood.

The terms were, that the species should be collected and described by the author and the specimens in illustration be produced before our Society.

Accordingly at the at Sherborne on the 12th December, 1877, the following paper was presented by my son, and somewhere about 50 specimens were shown by way of illustration and explanation of the text.

From the paper and specimens we learn that the author had succeeded in making out 8 species which had been previously described, and also in naming as many as 9 species that he could not find out had been noticed by Authors. To this list I have added another species since the paper was sent in.

These results may be considered as highly interesting when we consider not only the smallness of the area under review but the usual thinness of the bed from which most of them were obtained.

In fact the greater part of the collection was got from the rich

quarry at Bradford Abbas; at the same time it must be noted that some two or three forms occur at Sherborne which we have failed to find in our own quarry.

I may say with regard to the paper that the descriptions are very short, but still they are as detailed as one might expect from a first attempt. When, as I hope, a monograph may appear at no distant date describing the species of the whole of the oolitic rocks, more ample descriptions may be desirable.

Our Club, it may here be stated, is so satisfied with the results of this their first prize that they offer another on the like terms for descriptions of the genus *Trigonia* from the same area.

In doing this the members anxiously hope that they are encouraging the study of Natural History in a very important School, and they note with the most sincere pleasure that collections to forward these studies are gradually being got together at the King's School, and they ardently hope that the time is not far distant when the school will possess a highly valuable and teaching collection of natural objects lodged in a suitable museum.

THE EDITOR.





On the Species of *Astarte*,

FROM THE INFERIOR OOLITE OF THE SHERBORNE DISTRICT.

By S. S. BUCKMAN, Esq.



THE genus *Astarte* is thus described by Dr. Woodward:—
“Shell sub-orbicular, compressed, thick, smooth, or concentrically furrowed; lunule impressed; ligament external; epidermis dark; hinge teeth 2:2, the anterior tooth of the right valve large and thick; anterior pedal scar distinct; pallial line simple.”*

There are several recent species but the fossil ones are far more abundant, numbering according to D'Orbigny as many as 200 species.

According to Professor Morris's catalogue, they commenced in the Permian formation, but the greater mass of them is found in the Secondary and Tertiary rocks. In the secondary rocks we find according to Morris's Catalogue:—

- 10. *Chalk species.*
- 18. *Upper Oolite species.*
- 8. *Inferior Oolite species.*

* Manual of Mollusca, page 299.

In the district under review, viz.: that within a few miles of Sherborne, I have succeeded in obtaining as many as 18 Species, which it is the object of this paper to describe.

Our species resolve themselves into two natural groups, in the first of which the shell is more or less smooth and possesses somewhat fine lines of growth.

The second division has prominent ribs or ridges which present a somewhat ribbed appearance.

GROUP I.

Shell more or less smooth

1. *Astarte obliqua* (Desh.)
2. ,, *planata* (Sow.)
3. ,, *Mansellii* (S.S.B.)
4. ,, *expansa* (S.S.B.)
5. ,, *globata* (S.S.B.)
6. ,, *tumida* (S.S.B.)
7. ,, *pulehra* (S.S.B.)
8. ,, *rhomboidalis* (Phill.)

GROUP II.

Shell with distinct ribs or ridges.

9. *Astarte excavata* (Sow.)
10. ,, *elongata* (S.S.B.)
11. ,, *elegans* (Sow.)
12. ,, *multicostata* (S.S.B.)
13. ,, *spissa* (S.S.B.)
14. ,, *subquadrata* (S.S.B.)
15. ,, *depressa* (Lycett.)
16. ,, *(opis) trigonalis* (Sow.)
17. ,, ,, *lunulata* Sow.
18. ,, *angulata* (J.B.)

As the specimens have been obtained for the most part from

Bradford Abbas and Halfway House it will be well to give the following

Section of Bradford Abbas (East Hill) quarry.

	ft.	in.
1. Soil	0	4
2. White Oolite with irregular cleavage ..	6	0
3. Band of Marl with <i>Astarte</i>	0	3
4. Hard iron-shot rock with <i>Astarte</i> , Ammonites, Belemnites, etc.	1	0
5. Band of brownish stone with Ammonites	0	6
6. Iron-shot Oolite, a mass of Cephalopods	1	0
7. Marl with <i>Astarte trigonalis</i>	0	3
8. Bed with Univalves	0	9
9. Blue centred Oolite	1	2
10. Reddish sands, commencing the Freestone system of Ham Hill and the Cotteswolds.		

(These latter are from 100ft. to 150ft. in thickness, occasionally interpolated with bands of Oolitic stones.)*

The following is a description of species:—

ASTARTE OBLIQUA, (DESH). FIG. 1.

Cypricardia Lam.

Shell suborbicular, posterior margin very oblique going from the umbo in quite an oblique direction, upper margin lunulate; Lunule spoon-shaped; shell smooth; with very indistinct markings, interior teeth well produced; Shell one of the thickest of the series.

It occurs very plentifully at Halfway House and Bradford Abbas quarries; most of the specimens have the valves separate, though sometimes with the two valves in contact. This is perhaps one of the commonest forms in the district.

Proportions: Length, 30 lines; breadth, 24; depth, 18.

* See proceedings of Dorset Natural History Field Club.

ASTARTE PLANATA, SOW. PL 257, F. 2.

"Spec. Char. transversely obvate gibbose, with small, obtuse, concentric ridges; edges crenulated; lunule concave; shell thick,"

"The ridges upon the surface are small, obtuse, close together, and lost near the margin; the edge is often very broad, flat, and crossed by sulci, formed of extended crenulations, which are visible even where the valves are close. The anterior side is slightly truncated.

This is a plain-looking shell in consequence of the smallness of the ridges; it is nearly two inches wide and above one inch-and-a-half long when full grown.*

This differs from the former in being decidedly gibbose. The shell is thinner.

Proportions Length, 24 lines; breadth, 20; depth, 5.

Bradford Abbas and Halfway-house, rare.

ASTARTE MANSELLII (NOBIS) FIG. 3.

Shell suborbicular, gibbose, upper margin nearly straight, lines very fine, and numerous; lunule very small.

This shell is much like *A. obliqua*; it is, however, decidedly gibbose, and flatter.

Proportions: Length, 22 lines; breadth, 20; depth, 13.

This shell is found rarely at Bradford Abbas, Halfway House, and Clatcombe.

ASTARTE EXPANSA (NOBIS). FIG. 4.

Shell sub-triangular; gibbose, upper margin slightly curved; very oblique; lower margin semilunate; lunule elongate, large; lines small, indistinct, and numerous.

This shell has hitherto been confounded with *A. excavata*, but it differs from it in being smooth, triangular, and oval, but without an excavated lunule.

Proportions: Length, 36 lines; breadth, 30; depth, 12.

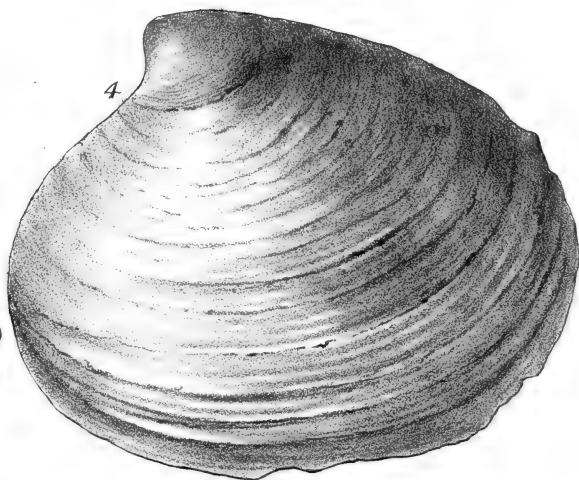
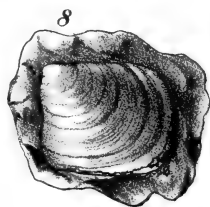
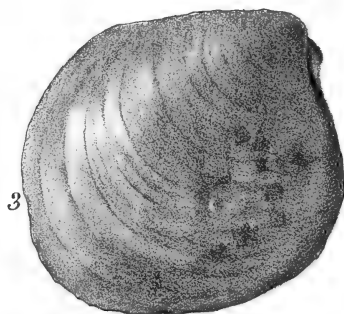
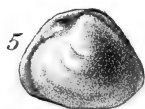
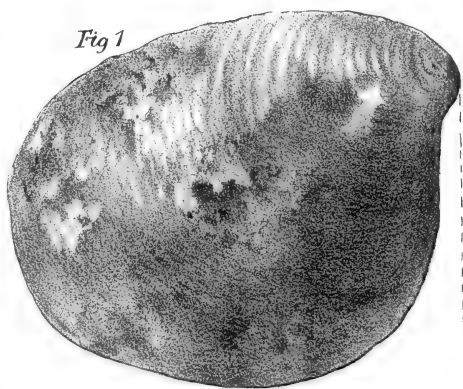
* Sow, Min, Conch, vol. iii, page 103.

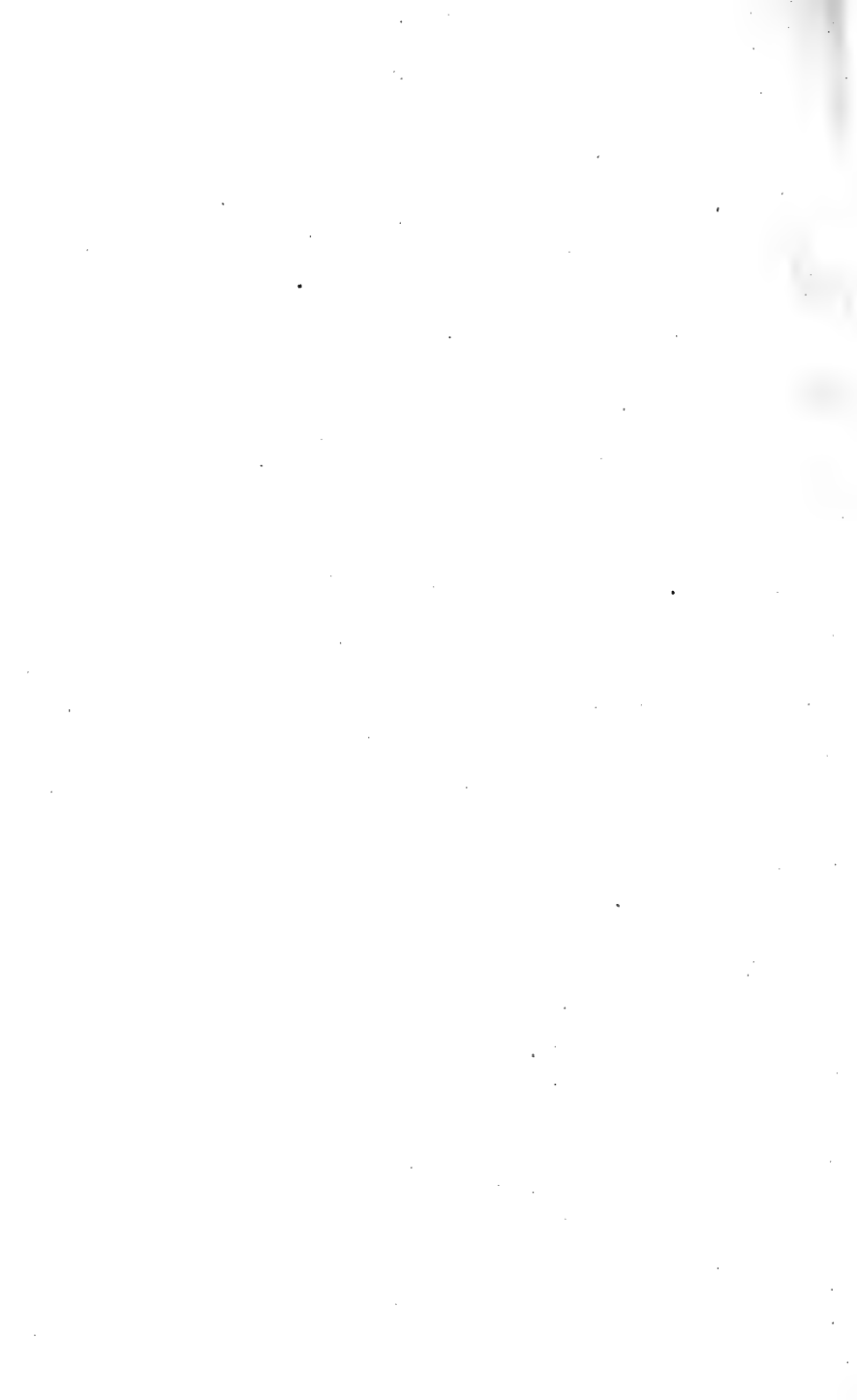


PLATE OF ASTARTE (Smooth).

Fig.		Page.
1.	Astarte obliqua, Brad ^f ord Abbas, Hal ^f way House, &c.	83
2.	„ planata, Halfway House	84
3.	„ Mansellii, Clatcombe, Halfway House, and Brad ^f ord	84
4.	„ expansa, or 'y at Brad ^f ord	84
5.	„ globata, Bradford Abbas	85
6.	„ tumida, Bradford Abbas	86
7.	„ pulchra, Bradford Abbas only	85
8.	„ rhomboidalis, rarely at Bradford Abbas ..	86

Fig 1





I have only seen a single specimen, which was obtained for me by Mr. Reynolds, the fossil-collector, from Bradford Abbas.

ASTARTE GLOBATA (NOBIS). FIG. 5.

Shell sub-triangular, very tumid, so that its proportions are nearly the same every way; lunule broad, but not deep. Umbo near the posterior margin. This is a small smooth delicate shell.

Proportions: Length 8 lines, breadth 7, depth 6.

This shell occurs very sparingly at Bradford Abbas.

ASTARTE TUMIDA (NOBIS). FIG. 6.

Shell sub-triangular, somewhat tumid, but less so than the former. Umbo in the middle of the shell, forming the apex of a nearly equilateral triangle, and thus differing from the former.

It is smaller than the former, but cannot be confounded with it inasmuch as the *A. tumida* is rounder and only slightly gibbose.

Proportions: Length, 6 lines; breadth, 6; depth, 4.

This shell is found rarely at Bradford Abbas, in bed 3 of the section (marl bed).

ASTARTE PULCHRA (NOBIS). FIG. 7.

Shell somewhat triangular, the posterior margin is gibbose, but less so than *A. tumida* and more oblique; upper margin nearly straight; lunule small and spoon shaped; crenulations in the interior of the shell very well defined.

This is really a very distinct form, and cannot be confounded

with the two previous ones. I have only one specimen from Bradford Abbas quarry, and should not venture to name it except for its difference from all others that I have examined.

Proportions : Length, 9 lines ; breadth, 8 ; depth, 6.

ASTARTE RHOMBOIDALIS (PHIL). FIG. 8.

Mollusca from Great O. Morris and Lycett.—Tab. 9, fig. 20.

Isocardia rhomboidalis (Phil., Geol., York).

Hippopodium luciense (D'Orb Prod Paléont).

„ *Bajociense* (D'Orb Ib.)

“Shell thick, convex, sub-quadrate, or oblong ; umbones anterior, obtuse ; hinge margin elongated, sub-horizontal, but slightly arched ; lunule large, elliptical ; inferior margin nearly straight, parallel to the superior border, and slightly sinuated ; internal margins of the valves plain, acute ; folds of growth few, large, and distinct ; concentric striations regular, delicate, and closely arranged.”

“The vertical range of this remarkable species is very considerable ; it occurs in the Inferior Oolite of the Cotteswolds, the Great Oolite of Minchinhampton, the Coralline Oolite of Malton, and we have seen fine casts from the Kimmeridge Clay of Wilts. The *Hippopodium Luciense* and *H. Bajociense*, D'Orb, are probably identical with this species.”*

Very rare in Bradford Abbas quarry. Mr. Lycett's figure represents a fossil three times the size of our specimen. Mr Darrel Stephens has found larger specimens, but nothing like the size of the great Oolite form.

Proportions : Length 7, breadth 9, depth 7 lines.

* Morris and Lycett, Mollusca from Great Oolite, pages 84 and 85.

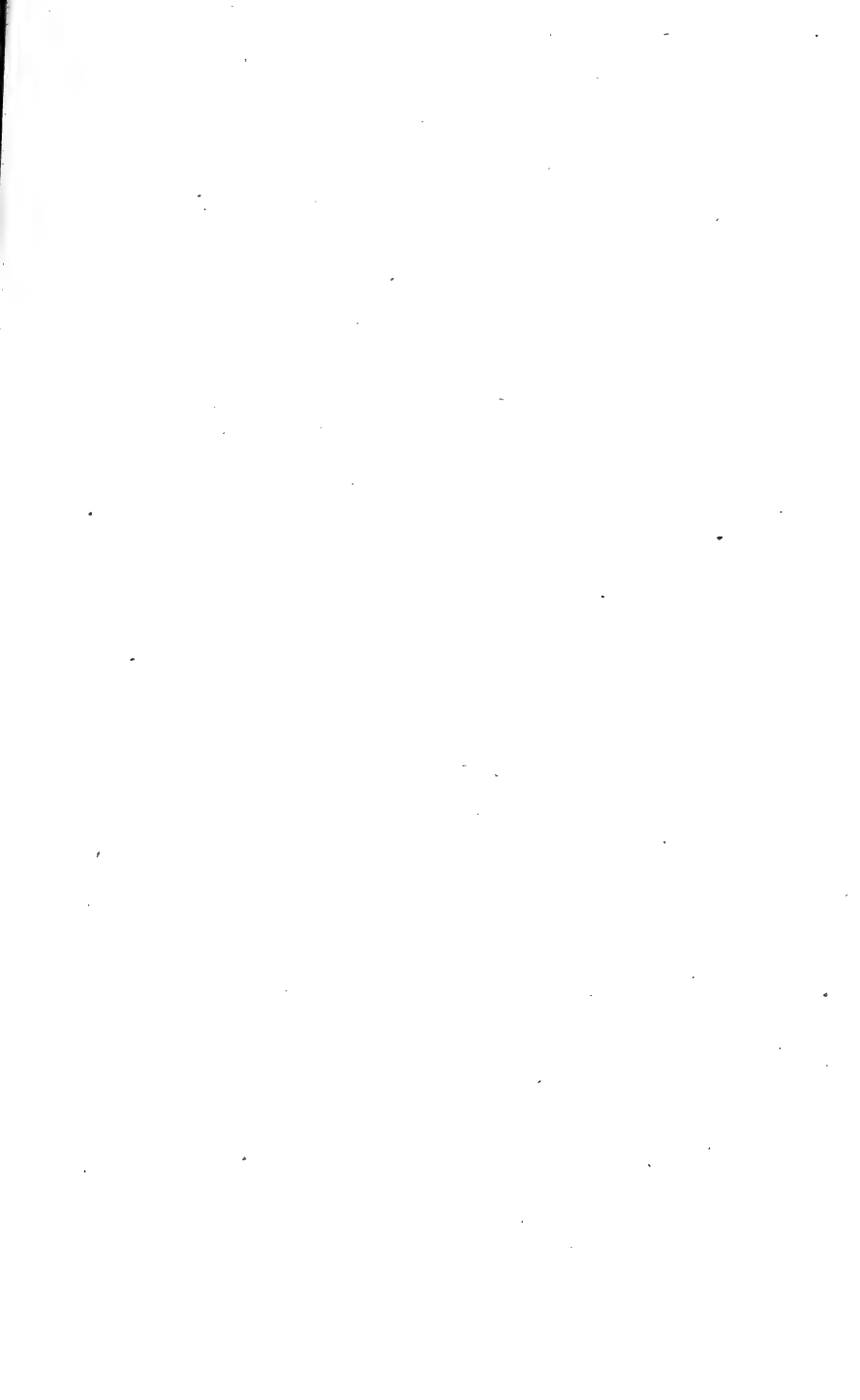
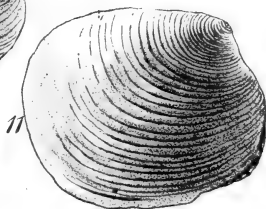
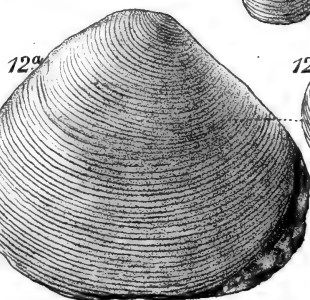
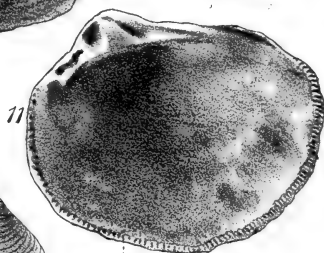
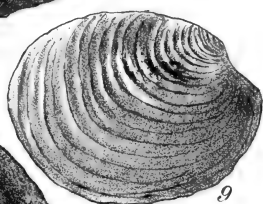
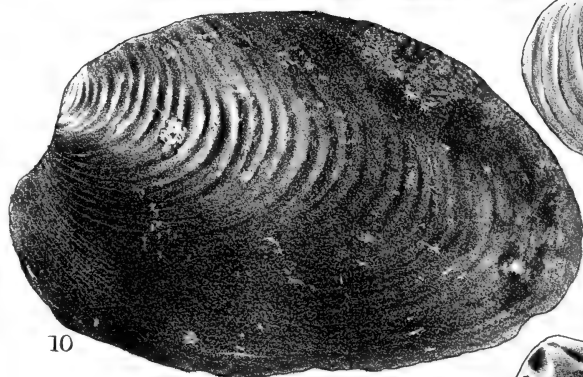
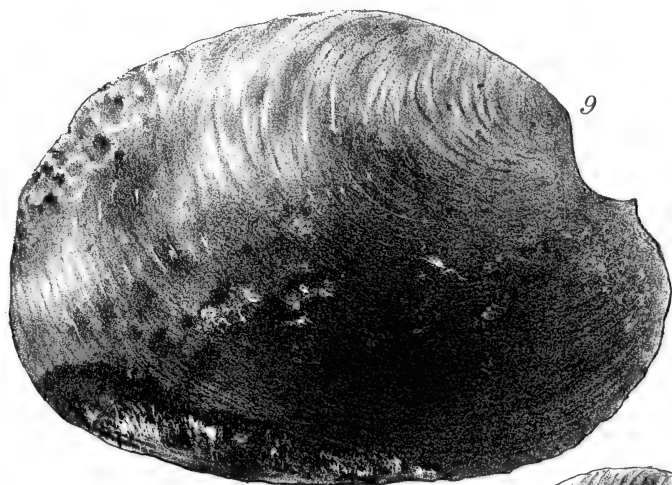


PLATE OF ASTARTE (Ribbed).

Fig.		Page.
9.	Astarte excavata, common to all the quarries, young specimen	87
10.	„ elongata, Bradford Abbas and Halfway House	87
11.	„ elegans, at all the quarries, internal view shewing the crenulations, external with the ribs	87
12.	„ multicostrata, rare at Bradford, found mostly at Clatcombe	88
13.	„ spissa, Milborne Port	88
14.	„ subquadrata, Bradford Abbas	88
15.	„ depressa, Bradford Abbas	89
	„ (Opis) trigonalis, Bradford Abbas	90
16.	„ (Opis) lunulata, Bradford Abbas	91
17.	„ (Opis) angulata	92





GROUP II.

ASTARTE EXCAVATA. FIG 9. (Sow. Min. Conch. Tab 233).

Goldfuss. T. 134.—Fig 6.

A. complanata (Romer T. 6.—Fig 28.

“Spec: Char. Obovate, convex, concentrically costated; anterior side truncated; lunule hemispherical, excavated; cartilage enclosed in a sulcus; margin toothed.”†

Proportions: Length 48, breadth 36, depth 20 lines.

This is the largest species of the genus. Its lines are usually well defined, and it is perhaps the most abundant of the series. It is somewhat rare to find two valves together, but this is not uncommon at Bradford Abbas quarry.

ASTARTE ELONGATA (NOBIS). FIG. 10.

Shell slightly gibbose, anterior margin curved, elongated, and gradually sloping to a point; base straight; lines almost rectangular and clearly defined; lunule obovate, and somewhat deep.

This shell is not unlike the preceding, but differs from it in its greater length, as the following will show.

Proportions: 40 lines, breadth 30, depth 18.

Somewhat common at Bradford Abbas. It is a very elegantly shaped shell, but rarely found with both valves together.

ASTARTE ELEGANS. FIG. 11.

Sow: *M. C. T.* 137.—Fig. 3.

Phill: *G. T. T.* 11.—Fig. 41.

Goldfuss: *T.* 134.—Fig. 12.

Spec: Char. Transversely oblong, convex, depressed, with

† *Sow, Min, Conch, page 57, vol. iii.*

many small (prominent) costæ ; lunule cordate ; margin crenulated within.*

This, as its name implies, is a very neat form. It is by no means uncommon, especially at Bradford Abbas. It is reported from the Cotteswolds and also from Dundry, in Somerset.

Proportions : Length, 17 ; breadth, 14 ; depth, 10 lines.

ASTARTE MULTICOSTATA (NOBIS). FIG. 12.

Shell sub-triangular, with a rounded base ; posterior margin, gibbose ; anterior nearly straight ; umbo nearly in the middle of the shell, thus differing from *A. elegans*, which has it near the posterior margin ; lines exceedingly numerous, but very distinct ; more than double the number of the former shell.

Proportions : Length, 21 lines ; breadth, 19 ; depth, 15.

Occurs very rarely at Bradford Abbas, and also at Clatcombe.

ASTARTE SPISSA (NOBIS). FIG. 13.

Shell sub-triangular ; gibbose, tumid, base rounded, lunule large for the size of the shell, and heart shaped. Lines numerous, but distinct, crenulations very sharp.

Proportions : Length, 6 lines ; breadth, 5 ; depth, 4.

This shell occurs somewhat commonly at Milborne Port in the White Oolite, but I have not found it at Bradford Abbas.

ASTARTE SUBQUADRATA. FIG. 14.

Shell somewhat quadrate, posterior margin nearly straight and inclined outwards, upper margin incurved, anterior somewhat truncate, base flattened, lunule very small and narrow, costæ numerous and distinct.

Proportions : Length, 9 lines ; breadth, 8 ; depth, 5.

* Sow, Min, Conch, vol. ii, page 86.

This shell is much like *A. lurida* in shape, but is smaller and more delicate. It occurs very rarely at Bradford Abbas quarry.

ASTARTE DEPRESSA. FIG. 15.

Lycett t. ix., fig. 11.

Goldf. t. 134, fig. 14.

"Shell compressed, tranverse, ovately orbicular; umbones median, prominent, obtuse; lunule elliptical, narrow; cardinal margin nearly straight, oblique; concentric costæ convex, irregular, with fine interstitial concentric striæ."*

Proportions: Length, 7 lines; breadth, 7; depth, 5.

This shell occurs somewhat rarely at Bradford Abbas quarry.

GROUP III.

OPIS.

The remaining three forms have recently been separated from *Astarte* under the name of *Opis*, but as the fine example of *A. trigonalis* of Sowerby is a general fossil at Bradford and elsewhere, they are retained under the head of *Astarte*, placing the term *Opis* of Desfrance in parenthesis.

The *Opis trigonalis*, fig. 16, is a fine handsome shell, having very boldly crenulated inner margins. It is commonly met with in the basement beds of the stone above the sands at Bradford, East Hill Quarry, Anbury Quarry, and at Halfway-house. The other two species are always smaller, and are far less abundant. Indeed, the latter has been confounded with the *trigonalis* appearing to be a young example of the latter, but it differs in its very small lunule. †

* Morris and Lycett, *Mollusca from Great Oolite*, page 85

† Note by Editor.

ASTARTE (OPIS) TRIGONALIS. FIG. 16.

Sow. M.C., t. 444.

"Spec. Char. Cordato-triangular, depressed, transversely sulcated; beak pointed; anterior side separated by an angle, smooth."*

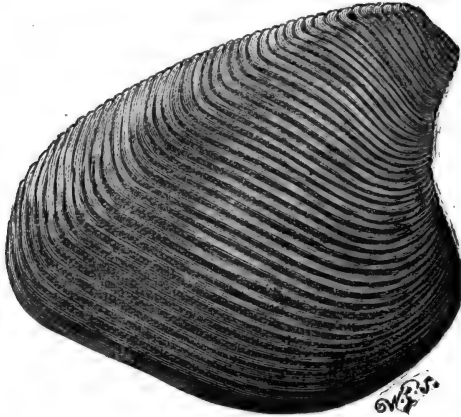


Fig. 16. *A. (Opis) trigonalis* Front View.

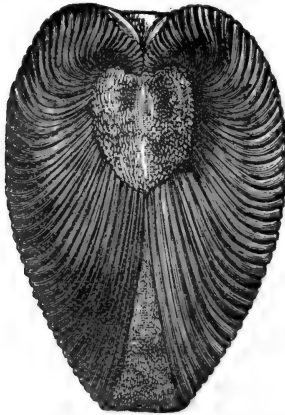


Fig. 17, *A. (Opis) trigonalis*. Back View.

Proportions: Length, 24 lines; breadth, 27; depth, 15.

* Sow, Min, Conch, page 63, vol. v.

This shell occurs in the lower bed at Bradford Abbas.

This is one of the most abundant species at Bradford, occurring towards the base of the I. Oolite rock not far above the sands. Shells with double valves are uncommon, not so single valves.

ASTARTE (OPIS) LUNULATA. FIG. 17.

Sow, M.C., t. 232.

“Spec. Char. Rhomboidal, pointed, gibbose transversely costated; anterior part separated by a projecting serrated keel; lunule deeply excavated; beaks involute.”*

Proportions: Length, 10 lines; breadth, 9; depth 9.

This shell occurs at Bradford Abbas quarry, but is rare.



Fig. 17, *A. (Opis) lunulata*.

ASTARTE (OPIS) ANGULATA. J. B., F. 18.

Spec. Character; obliquely triangular, posterior slightly gibbose, anterior flattened with a raised ridge at the junction of the valves, beaks incurved, lunule very small and superficial, whole shell sharply ribbed.

Proportions: Length, 9 lines; breadth, 6 lines; depth, 5 lines.

This shell differs from *A. trigonalis* in its small lunule, which is larger and heart-shaped in *trigonalis*, and from the *A. lunulata*, which possesses a lunulate and very deep lunule.

* Sow, Min, Conch, vol. iii., page 55.

The *A. angulata* is much of the same size, as *A. lunulata*, both being small species.

Only a single specimen has been found at Bradford Abbas occurring with the other species.

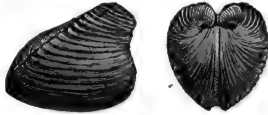


Fig. 18, A. (Opis) angulata.





The Cherry Tree at Over Compton.

By Professor J. BUCKMAN, F.L.S., F.G.S., &c.

DURING a visit of my friend, Mr. Edwin Lees, to Bradford Abbas, in one of his rambles to the neighbouring parish of Compton, he found the cherry tree which forms the subject of our engraving.

It is growing on the scarp of Babylon Hill, and forms a striking object in a scene of great interest and beauty. Standing on the hill side, the valley of the Yeo is at one's feet, and its windings can be traced from Yeovil far to the north, backed by Glastonbury Tor and the more distant Mendips.

The tree is situate about two-thirds down the slope of the steep scarp, its roots probably penetrating into the upper lias rock, and some notion of its size may be formed from the following :—

ADMEASUREMENT OF CHERRY TREE.

Number of Measure.	Height in feet.	Circumference in feet.	
4	10	19 6	Height to the Bifurcation of the branches 12 feet from No. 1.
3	6	21 0	
2	3	15 0	
1	2	21 0	

This is, probably, the largest tree of the kind in England. It

is now standing alone, but we are informed that some few years since there was another cherry tree in its vicinity reported to be somewhat larger than this extraordinary example.

During the hurricane of the 20th of November, 1877, a large limb was blown off, hence the scar which is shown on the front of our drawing.

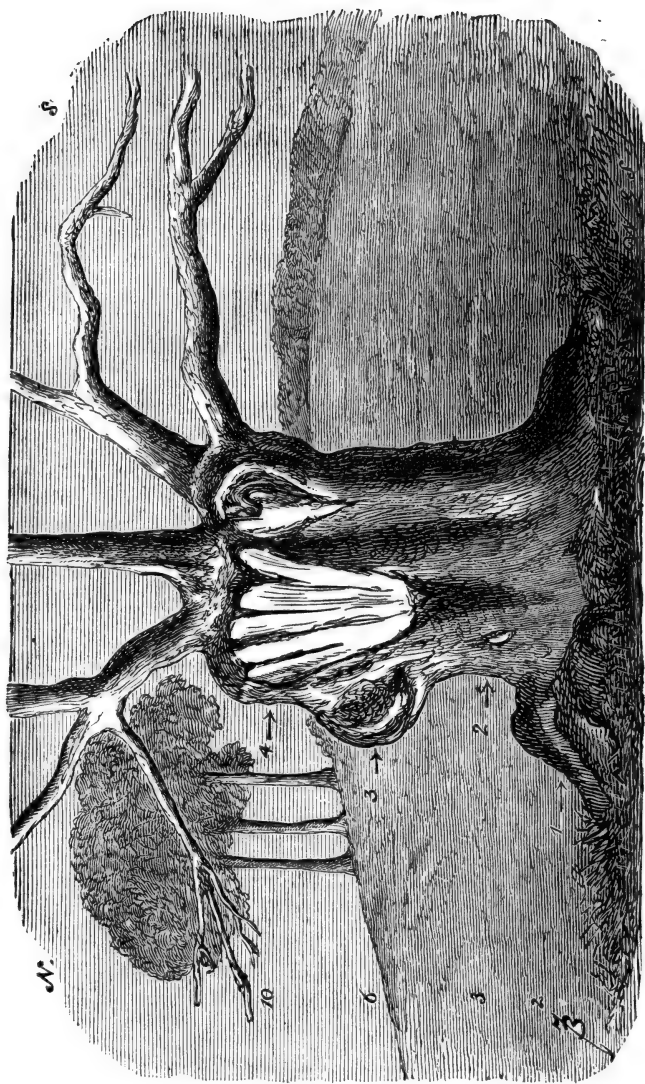
In April of this year (1878) it was in full flower, and now in June it promises an abundance of fruit.

The general features and characteristics of the species are so well described by Mr. Lees that we need say little upon this subject, but, as there seems to be some question as to whether the "wild cherry" be a true native or not, we cannot help thinking that a tree of such a grand size must at least have been where it is long before the cultivated sorts were introduced to this country.

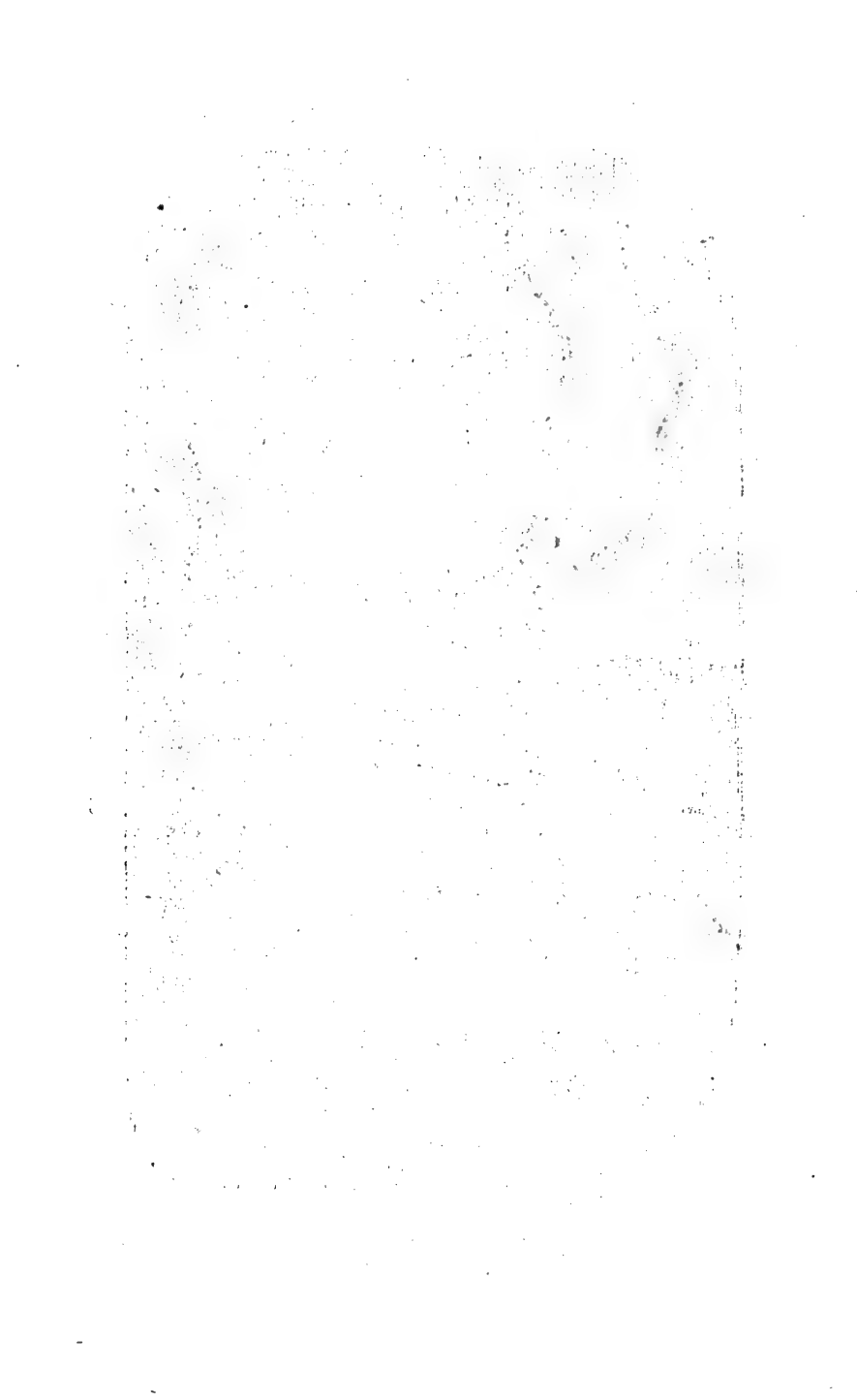
Mr. Selby, speaking of the size to which the wild cherry tree attains, gives seven feet circumference as a large tree. Evelyn speaks of some fine trees at Whixly, near Netherby. Our tree so far exceeds all that we have heard that we fancy we are justified in concluding it to be one of the largest, if not the largest, tree of its kind in Great Britain.

We cannot forbear remarking that the tree is one of the most beautiful of the forest denizens, and for this alone it is worth cultivation, but we have by us some beautiful objects turned from cherry that we wish the wood was more plentiful. It is quite as rich as tulip wood, of a fine grain, and takes a good polish. We, therefore, quite agree with the following remarks from the pen of our late kind friend and some time fellow-worker, P. J. Selby, Esq. :—

"Our attention has been directed to this tree for some years past, in consequence of certain facts that came to our knowledge respecting the durability of its wood when exposed to the alternation of moisture and dryness; and, after having viewed it in its respective bearings, viz., that of a tree calculated to produce



CHERRY TREE.—COMPTON.



timber of considerable magnitude and excellent quality; as one well adapted to plant as a nurse or intermediate occupant in mixed plantations, and where the oak is intended to remain as the ultimate crop; and also as an underwood applicable to various minor purposes; we have no hesitation in recommending it strongly to the attention of the planter, feeling assured he will find it much better calculated to repay him for its occupancy in all its stages than several other trees which, unfortunately, are now introduced in mixed plantations, such as the beech, wych elm, or even the ash, except where the latter is intended to form the principal and ultimate crop of timber. In a soil of tolerable quality, provided it be not too wet, the Gean frequently attains a height of from sixty to seventy feet in the course of fifty or sixty years, with a trunk of proportionate size, and large enough for all general purposes. In this state its wood is of great value, being of a strong, firm texture, red colour, close grained, easily worked, and susceptible of a fine polish. These qualities render it a desirable material to the cabinet maker, and the furniture made of it is little, if at all, inferior, both in respect of beauty and durability, to that of the plainer mahogany. In this country, where the wood just mentioned has in a great measure superseded all other kinds in our articles of furniture, and where the cherry tree has never been cultivated to any extent as a timber tree, it is rare to meet with specimens of furniture made of its wood; but in France and other parts of the Continent, where it abounds, it is extensively used for this and various other purposes, and is eagerly purchased by the cabinet-maker, the turner, and the musical instrument maker. Its value however is not restricted to the uses made of it by those artisans; it is also applicable to out-of-door uses, and is only inferior to the best oak, or its rival the larch. This durability or power of resisting decay under such circumstances renders it valuable even at a young age, or as soon as it is large enough to make posts, railings, &c."*

¶ Considering how easily the cherry tree may be grown, and its

* Selby's History of British Forest Trees, p. 60.

good qualities, it would seem deserving of attention as a forest tree whether it be desired for pleasure or profit, and we therefore hope that its cultivation may ere long be greatly extended.





On Worked Flints.

By Professor J. BUCKMAN, F.L.S., F.G.S., &c.

ALTHOUGH the study of antiquities has for centuries continued to be a favourite pursuit, and every object which could illustrate the history and pursuits of various peoples have been scrutinised with the greatest care, yet it is interesting to note that *worked flints* by the hundred have been scattered about our fields, and yet it is but comparatively recently that they have been recognised as such; nay, on the contrary, forms, many of which are now recognised as being very elaborately worked, were attributed to accident, or if admitted to have been fashioned by the hand of man, it was thought to be without any adequate object or purpose.

The finding of flint implements at Abbeville, in the valley of the Somme, by M. Boucher de Perthes during his Geological investigations, would seem to have connected these objects with Geological researches; hence we find that in 1860, and again in 1862, Mr. John Evans, F.S.A., F.G.S., read papers before the Society of Antiquaries, tending to show that worked flints were part of the history of the newer tertiary gravels, and that they were found in deposits with the remains of different extinct mammals, such as the *Elephas primigenius*, *Bos primigenius*, *Rhinoceros tichorinus*, *Felis spelæa*, *Cervus magaceros*, and others.

However, it is now found, that so far from worked flints

belonging only to drift deposits, they are found everywhere, and are now recognised as curious and interesting archaic objects.

Thus some twenty years ago, in opening Celtic Barrows in Gloucestershire, we found flint flakes indubitably worked by man's hands; so, again, in extra mural burial grounds around Cirencester, the Roman *Corinium*, flakes of a like kind were not uncommon, while the Saxon graves at Fairford are not free from worked flints.

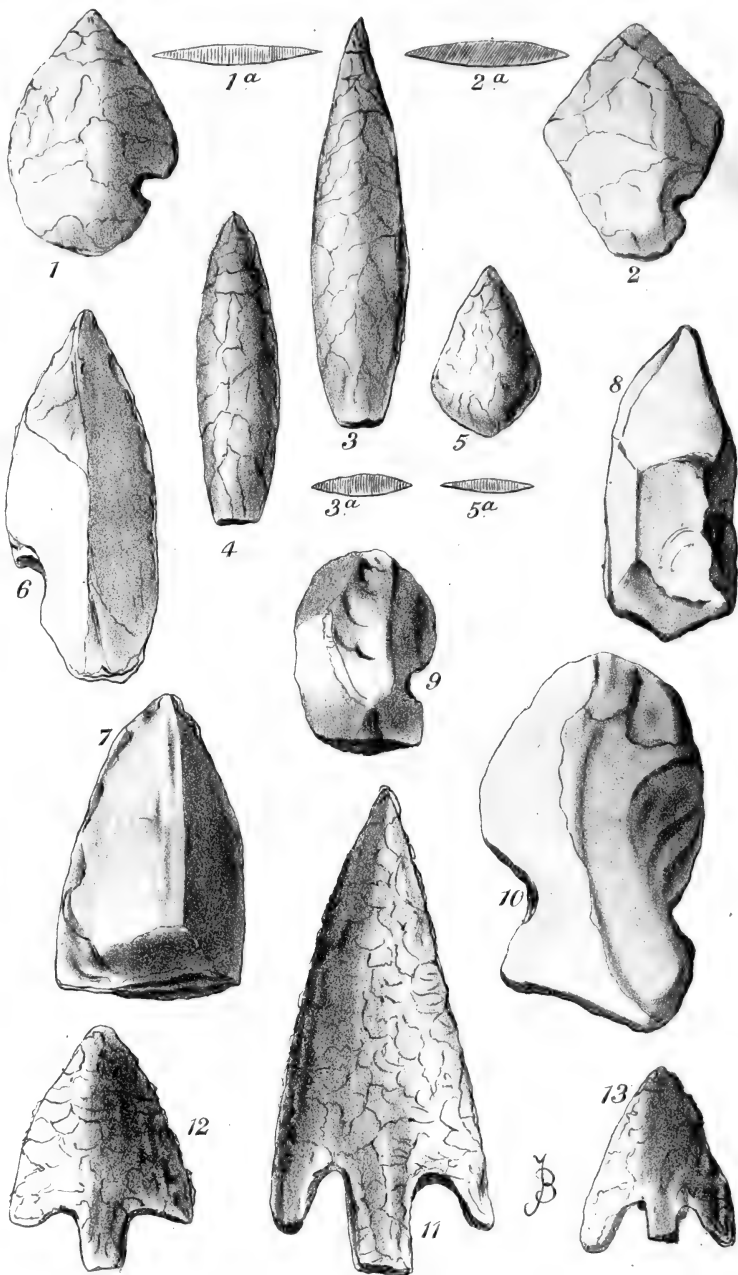
During some geological examinations at Lyme Regis we found what we considered a manufactory of flint implements upon the top of a high cliff overlooking the sea. Subsequently we have found hand-fashioned articles, both in flint and in chert, on the Island of Portland; and the wide open Fordington Fields at Dorchester yield implements of various forms, which, indeed, are to be met with abundantly in the flint deposits, which remain from the degradation of the upper chalk in different parts of Dorsetshire.

These facts show that with the eye once educated a wide range of observation may be before us, and objects of interest may everywhere be found in places where they were not suspected to exist.

However, we do not intend to describe the objects of this class of the county at large, but would rather beg our members each to examine his own district, while we proceed to notice a series of worked flints found for the most part in our own parish; nay, not only so, but principally on our own farm.

The village of Bradford Abbas lies in a valley of depression, faults having brought down the Fuller's earth below the level of the Inferior oolite sands. Our farm is situate on an eminence of the Inferior oolite rock, with a prospect towards the south, bounded by the chalk range of Dorset hills. Through the valley below us runs the River Yeo. In the valley will be found pebble drifts, both at Bradford and its associated tithing of Clifton Maybank.

Now, we have not yet found any flint implements in these



drifts, probably from want of diligent search; but on the oolitic slopes of our farm we find worked flints and flint cores in abundance, which were doubtless fashioned from flints brought up from the valley at a distance of about a mile and a half therefrom.

Our drawings have been taken from specimens chosen from hundreds of examples, and may therefore be considered as representative examples, which we shall at once describe under the following heads:—

1. *Arrow Heads.*
2. *Bird Bolts.*
3. *Thumb Scrapers.*
4. *Portions of Celts.*

1. ARROW HEADS.

These are of various forms; figures 1 and 2 represent what are called leaf arrow heads, both from their thinness (see sections 1 and 2a). They are thin and delicately wrought, and it will be seen that they are indented on their sides probably with the view of tying them on to the shaft of the arrow. Fig 5 is also a broad leafed arrow head, but without being indented.

Figs 3 and 4 represent the narrow or lanceolate shaped leaf arrow heads; they are, if possible, more delicately formed than those previously described. The section 3a will show their thickness.

Nos. 6, 7, and 8 are forms of arrow heads of a commoner description. 6 is remarkable for the indentation.

Fig 12 and 13 are good examples of the fluked arrow heads. The stem enabled them to be fixed to the shaft, while the flukes kept the arrow rankling in the larger bird, or the smaller animal, until they were subdued.

These are not common. No. 12 was found at Bradford, bu

No. 13 was obtained from an adjoining village, Barwick, which is in Somersetshire.

The examples here figured are but small, and yet we have seen still smaller ones. Fig 11 is a larger and longer form from India, and we have seen still larger. These, in all probability, were employed against larger game.

2. BIRD BOLTS.

We are constantly picking up flints of the shapes shown in figs 9 and 10. They are usually rounded, instead of pointed at the apex, and have the indentation apparently for fixing them to a shaft. These, it is thought, may have been used as bolts to knock over a bird, instead of transfixing it, as the former would have done.

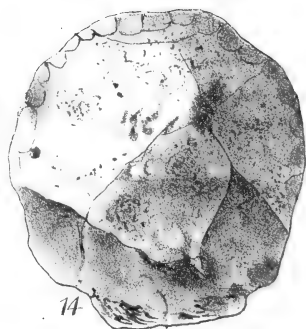
These are comparatively common ; they were occasionally made in a hurry without any great effort. Almost any little flint could be fashioned for their purpose in a short period.

These differ from the scrapers to be presently described, in that the latter are flat on one side, and much more elaborately worked or toothed at the upper extremity.

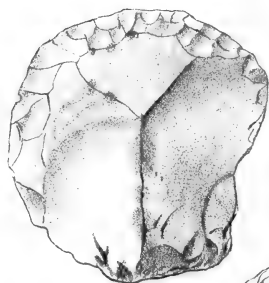
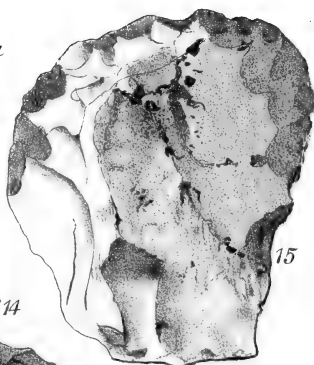
3. THUMB SCRAPERS.

These, after the French, were named "Grattoir"—an instrument to scrape with, but we agree with the late Albert Way, Esq., so long the esteemed Secretary of the Archæological Institute, in considering our English name of thumb scraper as more significant.

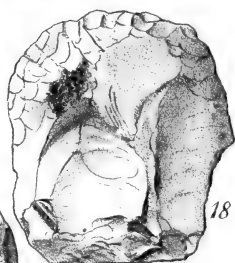
These have usually a more or less squared off base with one side smooth and flat, which we deem the under side ; while the upper side is rounded off, and the apex on that side



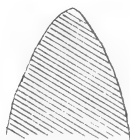
Side of 14



17



18



Section of Sharp edge at C.



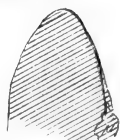
16a

Side of 16

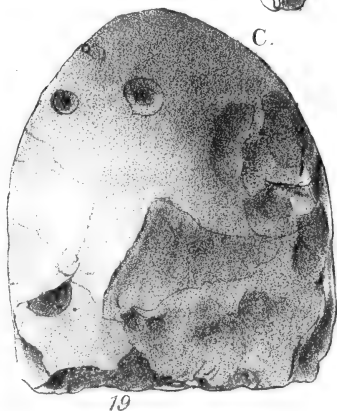


18a

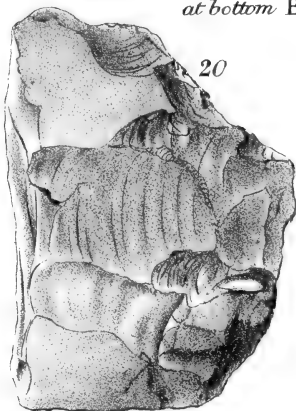
Side of 18



Section of rounded edge at bottom B



19



20

B



is very carefully worked, so as to preserve the combination of a more or less rounded contour with a fine toothed margin, admirably adapted to their supposed use of scraping and preparing skins for the various purposes for which these latter were employed.

Nos. 14, 15, 16, and 18 afford examples of the shorter and smaller thumb scrapers. These are sometimes much larger; we have met with examples at Bradford of broad specimens as much as three inches across.

No 17 is an example of a long scraper, of which we have several. These may have been used with the thumb, but probably they were not infrequently attached to sticks. These also vary in size, but in most of them the teeth at the apex have been wrought with considerable care, and how it could ever have been supposed that this was accidental surpasses belief, as none but rats could have gnawed them so evenly, and we cannot suspect that these animals could so serve hard flints.

4. PORTIONS OF CELTS.

We once saw a series of three perfect Celts which were exhumed from the diggings for drainage at the village of Crudwell, Wilts. These had a fine outline, and were finely polished at the sides, with a sharp pointed edge at the apex.

Now of this shaped implement, the true Celt of the ancient Britons, we have met with no perfect example in Dorsetshire; but, strange to say, we have several specimens of *portions* of them. These were evidently parts of old Celts, and had probably been used when broken to take off flakes for other small tools, and hence figs. 19 and 20 now represent flint cores, made from what were formerly polished Celts. The sections of figs. 19 and 20 are polished quite smooth, and their apices present sharp cutting edges.

Besides the objects now described, several others have been met with in the County, such as rounded flints or flint balls ; these have been called *Sling Stones*, but we incline to the belief that instead of having been used for either the sling or balista they were in reality the hammers which were employed to strike off flakes in fashioning flints. The ovate flints and hard stones were undoubtedly used for this purpose. These forms both occur somewhat plentifully at Jordan Hill, near Weymouth.

Thin flakes, used as *Knives*, or notched for *Saws*, of various sizes are found everywhere over the farm ; some flints squared up, as though for different tools, are likewise common.

It should be remarked that over the farm we not unfrequently meet with forms squared up like roughly formed gun flints. These have at one end—the flat one—the evidence of recent fracture. These may be accounted for from the fact communicated to us by an old gentleman of the parish, who assured us that when he was out shooting, if any accident occurred to his gun flint, he had often picked up a flint in the field (perhaps an archaic implement), broken off the end, and fitted it on the spot.

This brings down the use of flints to our own time.

It is not likely that gun flints will be again used, and flint tools and weapons have passed away in this country, though not in different parts of the world. Fig. 11 represents an arrow-head brought from India, in some parts of which they are still used as of old, and we have in our possession Celts from both India and Australia. In the latter, and in new Zealand, these implements, we are told, are still in use to fashion the dug-out boats.

We have now, perhaps, said enough to convince our members that many of these articles point to a time when metals were scarcely, if at all, in use ; at the same time we are not to suppose that they were abandoned when metals began to be employed.

In all probability we have still much to learn about these objects, and it has been on this account that our pockets for

some years have been well stored with flint chips, flakes, arrow-heads, &c. ; and in advising our members to pick up all the flints that give the remotest idea of having been worked, we feel sure of having introduced some of you to a source of surprise and pleasure which will be not unwelcome.





Notes on the Cromlech at Portisham.

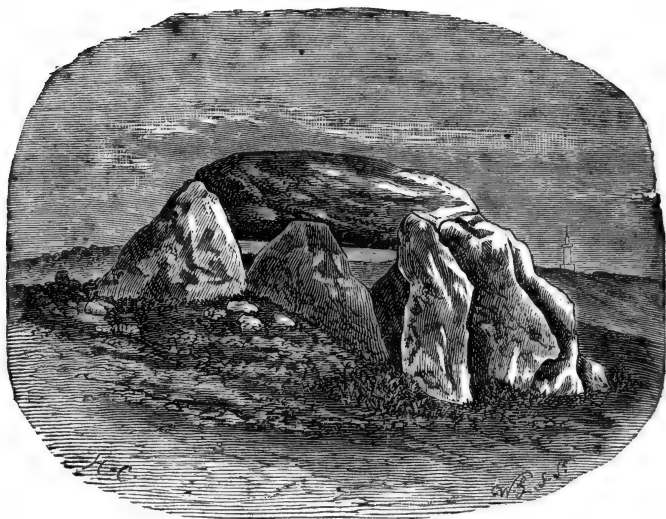
THE Cromlech at Portisham (commonly called Possum) would seem to deserve more than the passing notice of a visit which was made by the Club on June 20, 1876.

Therefore, as Miss Colfox has so kindly made drawings of this Cromlech, together with one by way of comparison at Morbihan, in Brittany, in presenting our readers with copies of these we propose to add a few notes upon these structures.

The Cromlech at Portisham, which rejoices in the name of the Hellstone, is situate upon an eminence to the north of the village, the foot of the hill being approached along the banks of a rivulet which runs through and over a picturesque mass of boulder stones, which, as they occur on the hills around the Cromlech in question and another in its vicinity, may doubtless have been derived from the heights above, having formerly belonged to that sandy deposit of the tertiary formation which rested on the chalk, and is perhaps of the same age as the grey wethers of Wiltshire, of which stones the ancient monument known as Avebury circles, and also some of the huge masses of Stonehenge, are formed.

It is likely then that the Cromlechs were formed from stones found handy for their purpose, and more especially when these occurred in commanding situations.

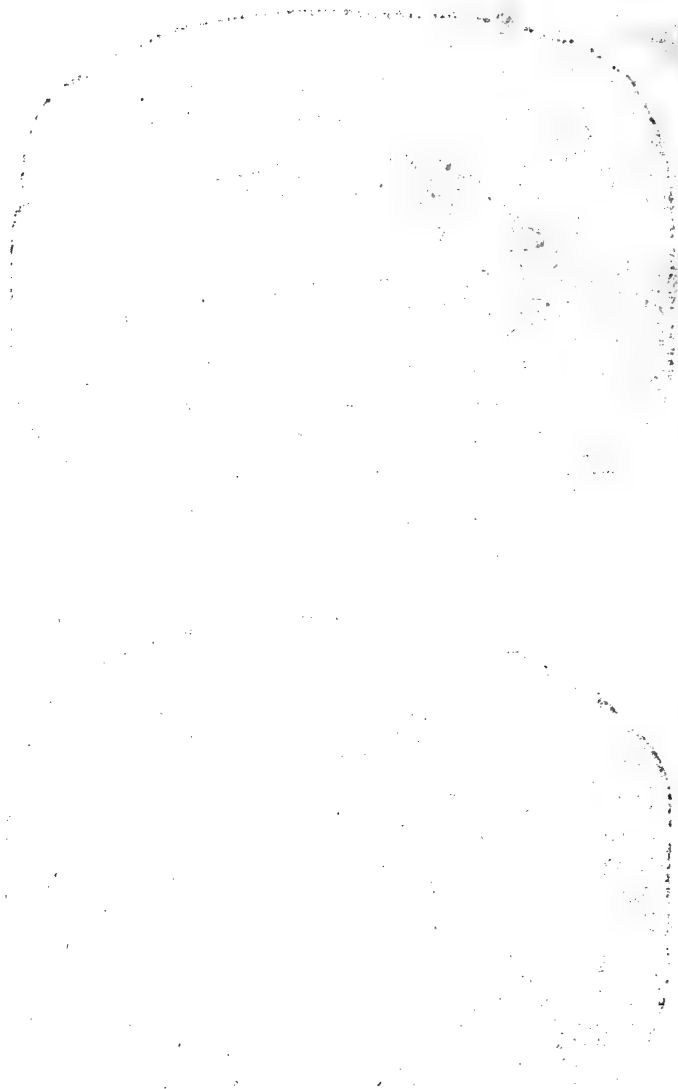
Much speculation has been hazarded as to the use and object of the Cromlech; but all experience confirms the view that they were cementaries built to contain the remains, sometimes of a single individual, and at others of a whole family; thus Mr Lukis in his "Observations of the Primæval Antiquities of the



1—CROMLECH.—PORTISHAM, DORSET.



2—CROMLECH.—MORBIHAN, BRITTANY.



Channel Islands" has the following remarks:—

"THE CROMLECHS.—After the investigation of about twenty of these chambers of the dead, and examining their contents, the result has been convincing and satisfactory as to their original use, and they can no longer be considered otherwise than as ancient catacombs, erected by a remote people." *

It is interesting to note that the Cromlechs in the Channel Islands are evidently the same in kind, and were doubtless built by the same race of people to whom the Hellstone and the other Cromlechs of the county of Dorset are referred.

If we go further south we find in Brittany a repetition of the same kind of remains. Our engraving No. 2 is from a drawing kindly made by Miss Colfox, and has been described as follows:—

"This Cromleeh consists of a large rough stone placed horizontally on nine upright stones. It is from one of the fifty Isles of the Morbihan Brittany, and others abound in the neighbourhood, several being still extant on this same little 'Ile aux Moines,' where there is also a circle of stones of considerable size. It is, like the Hellstone, placed on a high ridge commanding a fine view of the sea." †

The connection of our monument with the one figured from the Morbihan seems certain, and no less so with the like structures in the Channel Islands.

These facts seem all the more probable from the following remarks, also copied from Mr. Lukis's paper, before referred to:—

"The grave, the churchyard, the dark cavern, and the lonely cairn, still in our day continue to fill the mind of the ignorant with timid fears or apprehensions of evil. The 'heaped-up

* The Archæological Journal, Vol. 1, p. 146, 1845.

† Note by Mrs. Colfox, who so obligingly showed a fine collection of drawings of these structures on the visit of the Club to Bridport.

earth' and turf, which once lay over the covering stone of the Cromlech, having been long ago removed or levelled by time, these ancient depositaries of the dead have become exposed and left in detached portions, standing like giant spectres deprived of those accessories which completed their original form. Neglected throughout many generations, their once venerated site and hallowed use forgotten, their very name lost or doubtfully preserved amid the changes which the soil has undergone, they are left standing in solemn ruin, to the gaze of ignorant wonder, and the perplexity of the antiquary. Attracted by the magnitude of their dimensions and peculiar forms, our forefathers regarded them as the work of super-human agency. Their various names have thus become associated with fairies, hobgoblins, giants, and dwarfs, in all countries where they exist. The '*Cromlech*,' or *inclined stone*, of Britain, the '*Grotte aux Fées*,' '*La chambre du Diable*' of the French, and the Celtic '*Ponquelaye*' of these islands, all designate certain localities under elfin influence, and from which the vulgar mind is yet apt to recoil with feelings of superstition and dread. These terms are, however, significant; for they testify to that ignorance of their original use which followed the extinction of the race which erected them. Those structures which have resisted the effects of time and remain entire owe their preservation in many instances to their remote distance from the haunts of man, or to that superstition which has in after ages paralyzed the hand of wanton destruction.

The names, '*Druid's Altar*,' '*Temple des Druides*,' convey a definite meaning when applied to the Cromlech, properly so called, and probably owe their origin to the generally received opinion, and the incorrect translation of the word *Cromlech*, or *inclined stone*, affirmed by certain writers as disposed to permit the blood of the victims to flow from west to east! all which is mere conjecture and equally untenable. The more approximate derivation of the word, if ever it was originally applied to these structures, would be from the '*corum*' (Breton), or '*cromen*' (Welsh), signifying a *dome* or *vault*—and '*lech*,' a *stone*, or '*lle*,' a *place* or *room* (lieu, Fr.; locus, Lat.), or, as in these islands,

‘pouque,’ and ‘large’ or ‘le’ (from whence puck, an elf, or dwarf), meaning the place of the fairy.”*

In considering the Hellstone, these notes become highly important, and more especially when compared with the remarks made at our meeting:—

“Mr. Edwin Lees, president of the Worcester Naturalists Field Club, being seated on the top of the restored pile, was asked to say a few words about it. Mr. Lees said he had seen a great many of these Cromlechs, which, no doubt, go back to pre-historic times. Various opinions had been given by Archæologists as to their original intention, but it is generally considered they were the burial places of some great chieftain or man of eminence. But besides that, he thought they were also places of divination—that some Druid, or person of divination, actually lived in this Cromlech, and that persons came to him and he offered them certain prophecies. But they were also consecrated to the worship of the goddess Hel, a female deity, to whom sanguinary sacrifices were made, and here, he had no doubt, on this altar such sacrifices had been offered. He believed these Cromlechs derived their names from the goddess, and these places got to be called Hail or Helstones. He found that in almost every county in England there were Helstones. There is a town in Cornwall called Helstone, and in Staffordshire there is a mound which bears the same name, and there is on it a monstrous impression which looks like the print of a man’s fist, and it is said that the Devil struck the place with his fist, and the mark remains to this day. In Saxon times they became places where curses were disseminated. Some holy man lived under these stones, and if you wanted to pay an adversary out, instead of giving him a knock-down blow with your fist, you got the holy man to curse him ‘in bed and in board, in living, in dying.’ There were places in Wales where some old fellows will still go to their Cromlechs, and will undertake to curse for a man who has given them a fee for so doing, and it is believed that these curses take effect on goods, property,

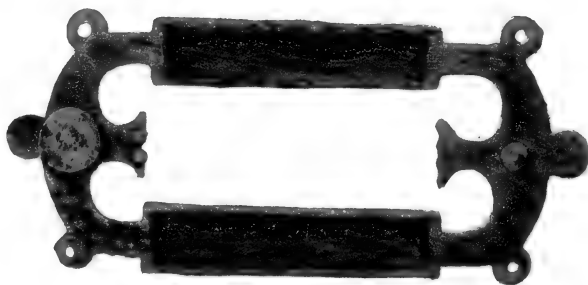
* Archæological Journal, Vol. 1, p. 144.

and person. The consequence was that a certain amount of superstition was attached to these Cromlechs. It was suggested that the name might also be derived from the word Hele (to conceal), as these Cromlechs covered graves."

These notes are sufficient to show the interest attaching to monuments of this description. There are several of these in Dorset, and it will be well to collect all that is known about them before they pass away.

THE EDITOR.









Notes on a Pendant from Dorchester.

THE beautiful ornament which forms the subject of our illustration was obtained from Dorchester by Mr. Edward Cunningham, through whose kindness we are enabled to figure it, and at the same time to quote from him the following notice of the find. "The buckle was found at the north-east corner of the new fair ground in Dorchester. There was only a small place cut open for the foundation of the new wall, and I could only ascertain that there was a well-made Roman mortar floor there. I found also several pieces of Samian ware, one with the maker's name, another with the characteristic ornament on it; also several pieces of black Roman pottery, &c. I consider it the site of a Roman Villa, just outside the walls which went to ruin on the Romans leaving the town." Our engraving of the article in question is of the exact size of the object, the upper figure representing a front view, and the lower one a back view of the same.

The framework of the whole is of copper, which has been oxidised externally, but by the removal of the patina the copper colour is plainly discernable, the back was impressed at the sides with the view probably of economising the metal; either end appears to have possessed an elevated button, of which the one on the right hand has been broken off.

A careful examination of the upper surface of this ornament will show that its framework is impressed all over, but here the space is occupied with enamels, of these the rounded ones at the ends have lost their paste, but the bows and inner angles have a beautiful arrangement of blue and scarlet enamels, the

blue ones having delicately-worked stars with scarlet centres. The framework at the sides is of very peculiar structure, consisting of a yellow-coloured enamel dotted all over into a pleasing but irregular pattern by metallic (?) points.

With regard to this ornament we would here refer to Akerman's *Archæological Index*, where, at plate 5, f. 46, we appear to have an enamel of the like kind, which is referred to as follows:—

“46.—Handle of a dagger, ornamented with minute brass pins in a very elaborate and tasteful manner. From a barrow in North Wilts.”*

Now we are not quite sure that the points here described are in our specimen of brass, or, indeed, that they are metal at all though, unless metallic, it would be difficult to decide what it is.†

These notes then are intended to support the two following points.

1st.—This is not a buckle, or a fibula.

2nd.—The work is not Roman though apparently found with Roman remains, as Samian Pottery, and the like.

1st.—The four eyelet holes, and the two buttons seem to point to the fact that this was a pendant meant to be fastened both by buttons and sewing to some terminable strops, and hence it was doubtless a pendant either to some personal ornament or probably to some elaborate horse gear; as there is no notion of a pin it could not be a brooch—or fibula—and as, again, no sign of a tongue is present, it could hardly be called a buckle.

2nd.—It seems to us not to be of Roman work as it is really of copper, and not of bronze, this, however, alone would not be sufficient to decide the question, neither is it enough to say that it was found on a Roman site.

The whole work appears to us so different from that of Roman that we cannot help thinking it is a case of the same

* *Archæological Index*, p. 54.

† We are unwilling to submit the specimen to the rigid tests required to settle this question.

kind that prompted the following remarks from Mr. Akerman in discussing—the origin of Anglo Saxon ornaments :—“ A question has lately arisen among antiquaries as to the country of their fabrication. Some have maintained that they are the work of the Anglo-Saxons, while others have contended for their Byzantine origin ; but, unless we can be assured that the Goldsmiths of the Eastern Empire wrought these fibula (buckles or pendants), for export to other countries, we must seek some other city as the place of their manufacture. That city was in all probability, Paris. These remarks apply more particularly to the *buckles* studded with pastes and precious stones, which there is every reason to believe were imported from the continent. Merovingian places of sepulture have been explored in France, and though some of the relics discovered therein differ from those found in Anglo-Saxon Tumuli some of the buckles are identically the same.”*

Now without at all subscribing to the notion that remains of this kind emanated from Paris we cannot consider that an ornament because it is beautiful must be of Roman workmanship, nor, from the same cause do we allow that it must have been Parisian, as we look upon it that the Saxons were also clever in work of this description, and it by no means follows that because a good piece of work is found in proximity with Roman remains that it must of necessity be of Roman origin.

THE EDITOR.

* Archæological Index, p. 126.





On Adam and Eve Dishes.

THE dishes we now figure are of great interest from their being occasionally met with in some of the most out-of-the-way places, both at home and on the Continent.

They are made of such different materials as Porcelain and Metals, and seem at one time to have been in general use, though their object and purpose is now well-nigh forgotten.

Different, however, as may be both the kind of porcelain or of metals, they are ornamented upon a similar plan, the principal figures, Adam and Eve—Adam to the right and Eve to the left of the Apple tree, with the serpent twisted round the stem of the tree, in a more or less picturesque attitude—the picture being usually a graphic illustration of the Temptation and Fall of our first parents.

On one of our visits to Rax House, Bridport, Mrs. Colfox kindly produced for the inspection of the Club a very interesting series of Porcelain and Faience objects, many of which are very curious, and amongst these was the dish. Fig. 1.

The material was that of the better kind of delph ware, and the figures, which are freely drawn, represent Eve with flowing flaxen-coloured hair presenting to Adam an apple with the right hand, while taking a fruit from the serpent's mouth with the left. The tree is dotted over with large and conspicuous apples of the yellow tint of ripeness.

This dish, we understand, was obtained from the county where we should not be surprised if others were met with in some of the old-fashioned houses, or even in cottages in out-of-the-way districts.

The second figure was taken by us from an Adam and Eve dish of fine brass we met with at the White Lion Hotel, at Bala, North Wales, but the drawing only shows the bottom of the dish, and is about half the actual size, the dish with its borders being 16 inches in diameter.

In this the figures are beaten in the brass. They are much like the former, but the serpent appears a far more important creature, having some pretensions to a human head with a coronet of triple leaflets. We saw a dish of the same kind at the sale of the late Rev. Richard Digby's effects at Thornford, which we should have secured only we could not glean anything of its history.

It was probably a copy of an older example, the lettering around the edge of the dish being, if we remember rightly, the Gothic form of the 14th century.

With regard to the dates of the dishes before us we may perhaps regard the upper example here figured as Italian Faience of the 16th century. The lower or brass dish is probably about the same period.

With regard to the latter we may mention that it bears every evidence of having been much in use, as on one side the rim is a patch of brass to mend up the worn-out metal. As regards the uses to which these utensils were applied it would seem that at one period their employment was universal, and yet their disuse seems to have been so sudden and so perfect that at present we can only offer a conjecture as to their application.

The figures clearly show that these dishes were connected with religious rites and ceremonies, and we have somehow got the notion—but cannot say whence derived—that they were used at funeral obsequies, and perhaps as follows :—

The dish filled with salt was placed on the stomach of the corpse. The salt, from its antiseptic qualities, being employed with the idea of keeping the atmosphere sweet and the surrounding conditions in a healthy state, while the weight of the dish

and its contents tended to keep down that distension which would be the necessary accompaniment of decomposition. Whether we are right in our conclusions is uncertain, still as these quaint objects are not unfrequently met with they seem to invite the attention of the Antiquary.

THE EDITOR.









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